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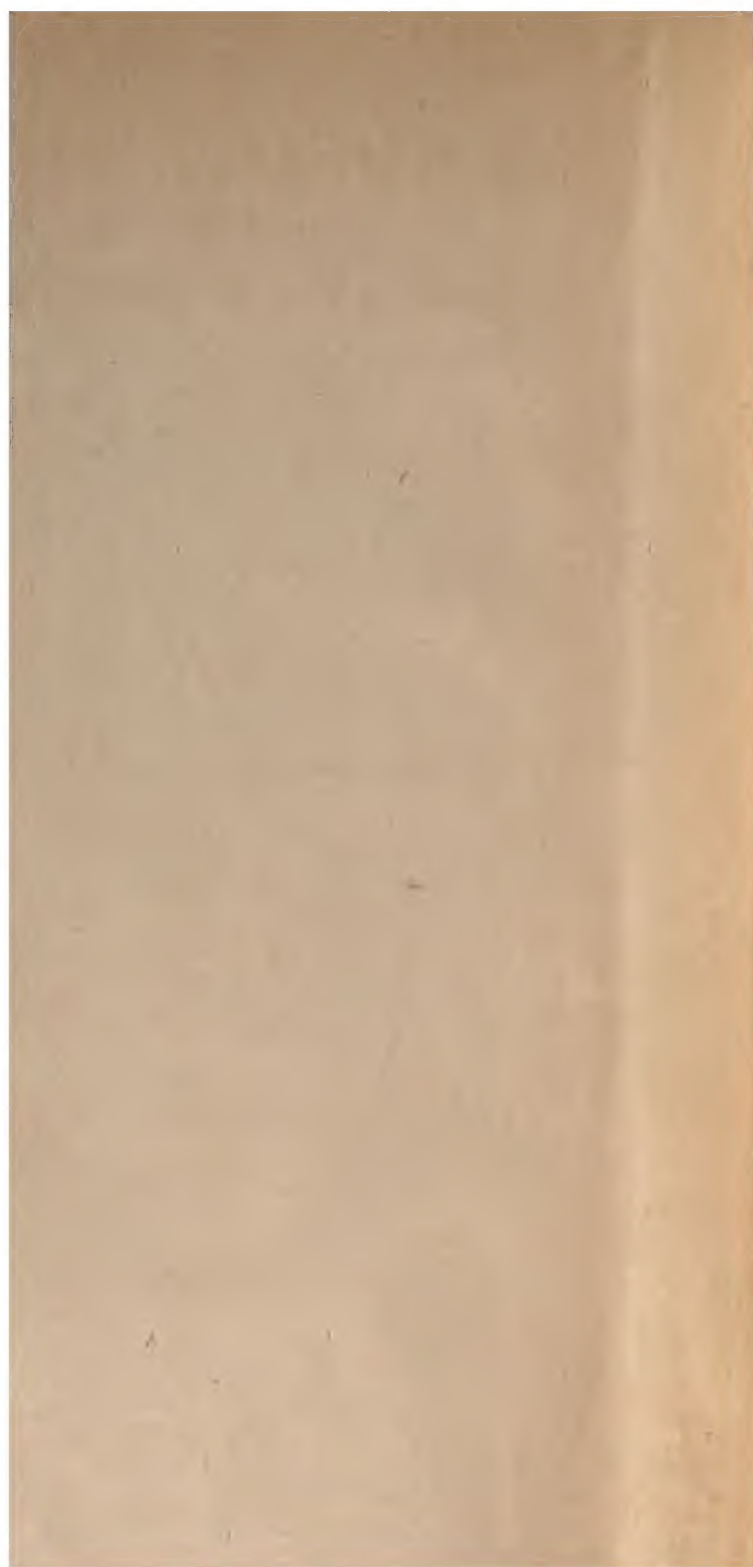
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HEALTH AND DISEASE

IN RELATION TO

MARRIAGE AND THE MARRIED STATE

A Manual Contributed to by

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The Only Authorized Translation from the
German into the English Language by

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NEW YORK
REBMAN COMPANY
1123 Broadway

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MAIL AND EXPRESS JOB PRINT
NEW YORK, U. S. A.

1200
547d
1904

Translator's Preface.

The *raison d'être* of this book is fully explained in Professor Senator's Introduction, so that it is needless for me to further emphasize it.

I have endeavoured to render a faithful version of the German text in the English language. Those particularly who are acquainted with the intricacies of the German tongue, especially when employed in writings on scientific subjects, will appreciate the onerous task I have undertaken and will readily overlook any shortcomings of which I may have been guilty.

Although much contained in the German original does not seem to immediately bear upon our interests here, I have thought it the better course not to omit any portion, and I leave it to the judgment of the reader to eliminate what he considers superfluous.

A small number of printer's errors have crept into the text, and for these I crave the indulgence of the reader.

JOSEPH DULBERG, M.D.

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I

Introduction

Health and Disease
in relation to
Marriage and the Married State

I

INTRODUCTION

By Professor H. Senator (Berlin)

MARRIAGE has probably at all times and with all nations—excepting perhaps a few races in the lowest stages of evolution—been regarded as an institution of the highest importance to the existence and prosperity of human society. The marriage ceremony has consequently always been celebrated more or less solemnly as the commencement of a new and momentous period and distinguished by festivities whose nature depended upon the actual state of civilisation as an exceedingly great event.

From very early times religions and legislatures have endeavoured by laws to regulate the new conditions arising from the married state with a view to increasing the welfare of whole nations or of the entire human family. Decisive factors in the framing of those laws were besides the demands of morality, the judicial aspects of marriage, the legal relationship between husband and wife, that between them and their relatives and descendants as well as the entire community. The laws as to marriage and succession have been drawn up by all civilised States with the utmost care and regard to minutest details.

On the other hand the question of the somatic condition in reference to marriage and the marriage contract has hitherto been little thought of. What effect the physical state of husband and wife has upon each other or their union; *vice-versâ* what influence marriage has upon the life and health of the married couple and their descendants or even on the welfare of whole families and communities—these questions have as yet received outside medical circles and particularly at the hands of legisla-

tures either no recognition at all or not as much as is demanded by our present knowledge and views.

Even the Mosaic law which contains the minutest hygienic prescriptions with regard to every phase of life confines itself on this subject to regulations concerning sexual intercourse (particularly, it appears, with a view to preventing infection) and to that connexion which is designated as "Incest." In the law books of other nations and chiefly those of the civilised West health and disease with regard to marriage and the married state are only taken into consideration in so far as they affect the **object** of marriage. As such was exclusively looked upon in olden times and frequently also by modern legislators' the procreation of children for the propagation and preservation of the human race or more correctly, as the ancients put it, for the continuity and advancement of the State.

As a result of this point of view the absence of the procreative age and any physical infirmity impairing the procreative faculty were considered valid impediments to marriage; otherwise no importance was attached to the physical condition of the parties contracting or living in marriage, unless such a course was called for by the dictates of morality.

The intention to create for the State strong and hardy citizens, and only such, found its most markedly practical expression in the customs of the Spartans who went so far as to suspend compulsory monogamy or monandry in the case of unfruitful marriages and to encourage the destruction by exposure of delicate and sickly infants.² It was the same notion that evidently influenced *Plato*³ when, in legislating for his ideal State, he suggested rules and regulations as to the contraction and form of marriage, which intended chiefly for full citizens and public servants had no other object in view but the procreation of strong and active children. *Aristotle*⁴ went even to the extreme of almost demanding the municipalisation of marriage and of the procreation of future generations. Those Spartan customs have never achieved general popularity, and

¹For instance, the Prussian common-law (*Landrecht*).

²*Xenophon*, de republ. lacedæm. I. 3 sq.

³*Plato*, de republ. V., chap. 8 9.—*Timæus*, p. 19a. 4.

⁴*Polit. H.* 3. 7. IV. B., 14, etc.

they are indeed diametrically opposed to our present-day feelings and our conception of humanity and ethics. The views of *Plato* and *Aristotle* on marriage and procreation have never been put to a practical test, not in ancient times and still less at subsequent periods, partly because they would permit to the State authorities too extraordinary an interference with the personal liberty of the subject and partly because the moral essence of matrimony has in the course of time and particularly under the influence of Christianity come into greater prominence. With the growing authority of the Church the solicitude for the spiritual welfare of the people assumed an ever increasing importance and all other considerations especially those relating to bodily well-being, earthly possessions and physical strength became of secondary consequence. Gradually, however, a change took place and the physical side of life enjoys at the present time greater appreciation or even as it is often reproached with, over-estimation. Whether this reproach is justified or not the endeavours of our generation to raise the prosperity of the nations by politico-economic measures which have many points in common with various sociological ideas prevalent in olden times deserve full recognition.

These endeavours and measures are rightly concerned in the first instance with the care of the health and vigour of the community which are necessary conditions of spiritual and moral progress. *Mens sana in corpore sano*. From this standpoint of public health and the preservation of the national energy marriage deserves the fullest consideration much more than it has generally received hitherto, because its importance to the physical and mental welfare of humanity goes further than the desire for a healthy and vigorous offspring. Apart from the sphere of procreation it has numerous relations to health and disease, namely in three directions. Marriage can be on the one hand a source of disease or the aggravating cause of pre-existent diseases; *vice-versâ*, diseases or physical defects can have a disturbing and detrimental influence upon marriage, and it is finally possible for marriage to consummate the cure or alleviation of conditions of ill-health.

With regard to marriage as a cause of disease the very

entrance into new conditions of life necessitated by the act of marriage, the separation from accustomed surroundings, the transition to an intimate companionship with a person of the opposite sex can give rise to depressions and disturbances of various sorts. These may be caused independently of sexual intercourse by the necessity of husband and wife to fuse their identities and by the mutual dependence upon each other thus created—in brief, by the whole force of the new mode of life.

The influence of marriage in this connection is naturally stronger and more frequently evident in the wife than the husband, partly because of the greater sensitiveness of the nervous system in the female and partly because the changes occasioned by marriage in the life of the woman are of much vaster significance than is the case with the man, though even in him marriage, inasmuch as it is the foundation of a household and a family, may also be productive of diseases as an outcome of the anxiety and worry of responsibility.

Secondly it is by the transmission of disease from one person to another that marriage can become a fruitful source of illnesses not only of a venereal character but also of other kinds as *f. i.*, tuberculosis and other infectious or parasitic diseases; for it is obvious that married life presents the most favourable opportunity to all the causative agents of an infective nature.

Thirdly, sexual intercourse *per se*—that is where both husband and wife are in perfect health and there is no vestige of any transmissible disease—can produce in various ways conditions of ill-health either of a purely mechanical nature (as *f. i.* injuries, hæmorrhages and inflammations caused by the sexual act) or through the influence which this act exercises upon the nervous system and which again is keener in the woman than in the man, or finally through pregnancy and childbirth which, although physiological processes, are nevertheless often enough the starting point of various and numerous untoward conditions.

Fourthly and finally, marriage is for various reasons of the highest importance as to the life and health of the offspring. To begin with, the labour process alone may cause injury to the child or occasion its death. But of no less import are certain conditions in the state of the parents or of one of them prior to

the birth of the child which play an important part at the conception and during pregnancy and may have a calamitous effect upon the embryo. Indeed such conditions are becoming too frequent.

It is erroneously assumed particularly in lay circles that it is only for such diseases of their parents as are acquired through debauchery and excesses that the children have to pay the penalty. This is not so. At least just as many absolutely innocent parents free from all taint of immorality and with a pure past life bring into the world dead or delicate children, children predisposed to all kinds of diseases, not as a consequence of their sins and vices but through circumstances connected with the married state which have either knowingly or unknowingly been neglected or disregarded.

As sound and wholesome fruit can only grow on sound soil so a healthy vigorous progeny requires health and vigour in the parents and ancestors. This radical truth has from the earliest times been duly appreciated by agriculturists and practically acted upon with regard to plants and animals. It is true that *Plato*¹ has recommended a similar natural selection with regard to human procreation but his precepts, though they have received some confirmation by the Darwinian theory, have in reality remained "platonic" for the reasons already mentioned. How often are these principles violated both in the contraction of marriages and in their consummation! What a number of weak and deteriorated generations have been the outcome of these transgressions! With more justification than Mephistopheles to the student can we exclaim to every child descended from diseased ancestors, to every descendant of wretched family conditions: "Woe to thee that thou a grandson art!"

And *vice-versâ*, as regards the influence of physical defects or of disease on the course of marriage this has for easily comprehensible reasons never been misunderstood or undervalued since it at once affects the question of procreative activity or even only that of the natural gratification of the sexual instinct. As has already been mentioned, both in ancient times as well

¹De republ. VIII. 459.

as at subsequent periods regulations have been decreed by the State or the Church with a view to preventing marriages incompatible with those objects or to dissolving them when they had already been contracted. These regulations of the different legislatures though unequal in their extent were unanimous in taking into consideration only a very small number of the physical conditions which can have a disturbing or damaging effect upon the married state. The reason is that the essence of marriage does not consist exclusively of the above-named objects relating merely to sexual life, and because all those disturbances which do not refer to the latter have either been entirely disregarded or very little thought of. It also became necessary with the gradually rising conception of the essence of marriage to attach proportionately less importance to bodily defects and infirmities. Moreover the view which the Church took of marriage as a divine institution or a sacrament was necessarily followed by as limited a restriction as possible of the impediments to marriage. The consideration which also has to be paid to personal liberty, to the right of the individual to choose for himself, a right which on such occasions as the contraction and consummation of marriage is of greater importance than in any other human institution, seems to make it very desirable that the marriage laws should contain as few ordinances as possible.

It is not the province of the medical man to lay down any rules because from the purely medical point of view it is only necessary to establish the fact that just as it may occasion danger to health, so marriage may on the other hand itself be subject to danger either through disease or through imperfect physical development, and that this danger is present not only under circumstances connected in any way with sexual life but also in other deviations from health and normality.

It is absolutely clear that it is principally, if not exclusively, chronic and hardly ever acute conditions which can act injuriously upon marriage. There will be opportunities to enter more minutely into this part of the subject when discussing the several diseases in their relation to married life. But these same relations present finally also a more agreeable side inasmuch as marriage can and often does exercise also a beneficial, salutary

influence upon the life and health of husband or wife. This influence can make itself felt prophylactically as well as therapeutically. Prophylactically in so far as married life with its attendant regular habits presents fewer opportunities for debauchery or other insalutary transgressions and more favourable hygienic conditions than single life, particularly so in the case of bachelors; and therapeutically inasmuch as there are conditions of ill-health which undoubtedly benefit or are even cured by the matrimonial state. They are mostly conditions of the nervous system, of the sexual life, and certain anomalies of the pelvic organs and of the blood more or less intimately connected with the procreative faculty. This therapeutical effect of marriage is also of deeper importance to the female sex than to the male and though it may not play as weighty a part as the ætiological factor of marriage does in the causation of disease it is not by any means deserving of undervaluation.

The foregoing remarks should make it sufficiently clear that matrimony with all its consequential conditions presents an enormous field to the activity of Public Hygiene and of Preventive Medicine. We have only to think of the number of marriages which are constantly being entered into without any regard to the physical condition of the parties contracting them, without any attention being paid to their constitution, state of health, descent or possible hereditary predisposition to disease. Let us realise how often necessary sanitary precautions are through ignorance or carelessness, or for the sake of other considerations, neglected by people about to marry or already married, and we shall at once understand how it is that marriage is responsible for so much disease and misery, so much wretchedness and misfortune in this world, and also how much of it could be avoided by judicious sanitary measures. Truly an object worth striving for!

In order to attain it, it is above all necessary that the medical profession should become familiar with all the conditions bearing on the subject and that it should be consulted before the consummation of intended marriages as well as during married life. There is no more appropriate person for this than the

ordinary family practitioner who knows the histories of the patients entrusted to his care and therefore has unequalled opportunities of observing them from their childhood or even from their birth. It is to be regretted that the tendency among the public to consult a specialist in every case of illness is having the effect of gradually eliminating the old-fashioned family attendant, a class of practitioners who should rather receive all possible encouragement with a view to becoming much more general. To decide whether a specialist is required or not, ought to be the concern of the family doctor who, no matter how capable he is, cannot be expected to be—nor is it necessary that he should—an expert in every branch of medicine, but is certainly more qualified than a layman to judge whether the opinion of any particular authority is called for.

In like manner this applies to the problems with regard to marriage and the contraction of marriage which we should like to see assigned to the medical man. For the questions relating to this matter belong to the various domains of medicine; they are consequently found more or less scattered among the subjects dealt with by its several subdivisions, though not always exactly from those points of view which interest us here. Some of these questions indeed have only arisen within recent times and been made the object of special research; others again though not exactly new yet have only lately been elaborated more carefully than was possible in former times. May it suffice to merely mention here the theory of parasitic diseases and their transmission, the doctrine of heredity and hereditary predisposition.

There appears consequently to be every justification for the attempt made as far as I know for the first time by the present Manual to collect all these questions into a comprehensible *ensemble* that shall serve to the medical man as a source of information, as a guide to his conduct in circumstances affecting the weal and woe of so many human beings. For may not the dictum of the physician have a decisive influence upon the future of whole generations?

Of course it will often be extremely difficult, sometimes perhaps impossible, to arrive at a decision, for even medical skill

and knowledge cannot accomplish the superhuman; but this book will ever act as a help and counsellor to the practitioner by informing him to what extent medical interference is possible. In doubtful cases it is better to declare oneself incompetent rather than shoulder unlimited responsibility by a decisive opinion.

It is not unreasonable to hope that when the knowledge of the relations between marriage on the one hand and health and disease on the other will have become more general in medical circles the profession will by its exertions, by instruction, explanations and warnings succeed in convincing the larger public as to the utility, aye, necessity of taking into consideration the physical condition of the parties contracting or living in marriage. Is a medical opinion less called for on such occasions than it is for instance with respect to the fitness of school-children, the inspection of scholastic establishments or the acceptance of candidates for life insurance?

It can hardly be expected or demanded that this conviction shall result in submission to medical authority in absolutely every case. There may arise occasions when considerations of health or even life would have to yield to others far more weighty and when medical opinion would be obliged to give way to circumstances of superior force.

It were also desirable that the State or Municipalities should devote greater attention than has hitherto been the case to the somatic conditions of persons about to marry or already married without giving rise to any fears that compulsory measures will become an immediate necessity. But inasmuch as marriage is an institution of the deepest importance to the welfare and economical prosperity of a nation the query is by no means unjustified whether it ought not to be permissible in the interests of the commonwealth to introduce measures calculated to restrict marriage where the sanitary conditions are unsatisfactory or to protect from danger persons already married much in the same way as is done by the laws and regulations with regard to vaccination, disinfection, etc. The question may therefore well be asked whether having regard to the health of the people living in matrimony and to that of their descendants

there should not be an expansion of the legal impediments to marriage and of the divorce laws as also of the punishable offences committed by husband or wife against each other or their offspring. At the same time it must be admitted that the difficulties which will have to be overcome in order to find a course consonant with the interests of the community as well as the demands of justice, with the general notions as to morality as well as the personal liberty of the subject are exceedingly great.¹

To enter into a minute discussion of these questions is not within the domain of medicine, and we must rest contented with having drawn the attention to the subject of all those whom it concerns, and with being the instigators of an agitation that ways and means shall be found to produce an amelioration of the conditions above mentioned.

It is idle to entertain the hope that the State and society will ever succeed by regulations, no matter how carefully planned and even if they were so exacting as those demanded by *Plato* for his best State, to create exclusively ideal marriages, but it is not unreasonable to hope that increased vigilance with regard to the sanitary conditions of marriage will result in the avoidance of a mass of disease and misery and in rendering so many marriages happy that there shall be every justification for *Goethe's* poetical description of the matrimonial state (*Die Naturliche Tochter*, Act 4, Scene 2).

„Vollbestand

Erwünschter Lebensgüter sind wir ihm,
Sowie der Zukunft höchste Bilder schuldig.
Als allgemeines Menschengut verordnet's
Der Himmel selbst, und liess dem Glück, der Kühnheit
Und stiller Neigung Raum, sich's zu erwerben.“

¹That these difficulties are not insurmountable in every respect is evidenced by the proposals recently made by such eminent jurists as Prof. v. *Liszt* and Prof. *Helwig* (*Zeitschrift zur Bekaempfung von Geschlechtskrankheiten*, I, 1903), with a view to preventing the spread of disease by sufferers from venereal affections. It might be worth considering whether it is not possible to propose and introduce similar measures of protection from the dangers arising from other diseases f. i. drunkenness.

II

The Hygienic Significance of Marriage

II

The Hygienic Significance of Marriage

By Professor M. Gruber (Munich)

I. Necessity of regulating sexual intercourse.

—Sexual instinct makes of the individual an instrument of procreation. In associating the performance of the procreative act with the highest pleasurable sensations nature has taken care that the individual shall not shirk his duty, that the stream of life shall not dry up. But while the desire is so strong and its gratification so agreeable it presents many dangers both to the individuals fulfilling it as well as to their descendants. Of course nature removes the damage thus caused by destroying in the course of time the feeble, the degenerate and the diseased. But this readjustment takes place at the cost of an enormous amount of pain and misery, of a wholesale destruction of individuals, families, races and nations. If the extent of this misfortune is to be diminished, if these dangers are to be avoided it is necessary that the blind desire shall be restrained by reason, and it is certain that mankind has from its earliest beginnings recognized more or less clearly the necessity of regulating sexual intercourse and attempted more or less aptly to deal with it. The more our knowledge of natural processes advances the more we become convinced of the necessity of this regulation, and the stronger the influence of this conviction on our will-power the more it is permissible to hope that near generations will treat the subject with incomparably greater wisdom than we are capable of.

But not all the fruit of the tree of knowledge is nutritious

and wholesome. Reason and civilisation can show the way also to the unnatural, and consequently to new dangers and injuries of moral and material kinds. The temptation is particularly great to deprive nature of her reward and to try whether and how it is possible to enjoy the delights of love without taking upon oneself the burdens of procreation. The more cynical an individual is in the satisfaction of his own selfish ends and in seeking pleasures without regard to others the more frequently and the more completely he will succumb to that temptation.

But nature will hardly allow anyone to impose on her with impunity, and most of these attempts result in the end in bodily harm to their originators. Even though the individual escape unpunished it is the community, the nation, which suffers where the evil assumes large proportions; not only because the natural increase of the population remains at a standstill but much more on account of the diminished family sentiment—that source of humanity which is hardly capable of substitution.

There is certainly no exaggeration in regarding a well-regulated and yet natural sexual life of a nation as the indispensable foundation of its permanent spiritual and physical health. A nation which seeks in sexual life nothing but pleasure is bound to disappear. The future belongs to the race that regulates its sexual life with a view to procreating a strong and mentally efficient progeny.

It has been prophesied that the medical profession will become the leading element of the nations. If this prophecy is to prove true it becomes primarily necessary that medical men should fully realise the enormous importance of a regulated sexual life in the procreation and formation of healthy and capable descendants, so that they may as the hygienic advisers of individuals and families unceasingly spread and keep alive this conception with all its consequences. Only *he* is fit to be the leader of a nation who feels from the bottom of his heart that man can only prosper in his capacity as *part of society*, that is as a moral being!

II. Hygienic advantages of marriage. a. Prolongation of the life of married individuals.—
There can be no doubt that monogamous permanent marriage

HYGIENIC SIGNIFICANCE OF MARRIAGE 19

which appears to be a most natural consequence of the numerical proportion of the sexes is morally as well as hygienically the best system for the gratification of the sexual desire.

Marriage is in the first instance like all our modern social and civilised institutions an arrangement which is of the highest benefit to the health of the married persons themselves. This statement applies fully, as statistics of mortality point out, with regard to all men over twenty years of age; with regard to women not before the fortieth year, since many of them are during the child-bearing period liable to succumb to the dangers that accompany the sexual life of the female, many of which however, it is scarcely necessary to mention here, can be avoided by rational midwifery and an appropriate care of the puerperal woman.

Since the statistics of all European countries show the same results, only those of Sweden are here given as an example.

TABLE I.¹

Sweden, 1881-90—Of 1,000 persons of each age-class, there died annually:

Age Years	Males				Females			
	Single	Married	Widow- ers and Di- vorced	Total	Single	Married	Widows and Di- vorced	Total
20	6.10	4.64	—	6.09	4.85	6.40	9.95	4.06
25	7.59	4.28	10.15	6.74	5.06	6.16	9.41	5.85
30	9.20	4.95	8.90	6.73	6.42	6.37	10.23	6.44
35	11.24	5.68	10.76	7.11	7.02	6.96	10.16	7.09
40	14.67	7.42	12.89	8.75	8.13	7.94	9.50	8.06
45	19.07	9.22	13.75	10.02	10.15	8.04	9.99	8.60
50	22.75	11.08	17.35	13.15	12.18	8.99	11.88	9.90
55	28.68	15.40	21.62	17.09	17.07	12.31	15.53	13.64
60	37.16	22.11	29.96	24.33	23.22	17.24	21.18	19.13
65	49.42	31.45	40.23	34.44	34.74	27.00	31.33	29.59
70	70.40	47.95	58.65	52.55	49.93	42.76	48.82	46.52
80	138.00	121.42	142.97	134.10	127.66	105.31	119.34	117.73
90	234.58	274.78	318.97	306.47	293.11	235.04	268.45	268.00

It is very important that we should have a clear idea wherein

¹S. Westergaard, *Die Lehre von der Mortalität und Morbilität*, 2nd Edit. Jena, 1901. Fischer, p. 228.

the favourable influence of marriage lies. An attempt has been made to prove by these statistics that sexual intercourse is a healthful necessity. But not only does this view rest on a foundation far too ingenuous for modern conditions, namely, that all single men are as a matter of course continent; it is inadmissible because there is more than one factor contributing to produce a lower mortality among married persons than among those living singly. The fact that monks and nuns do not generally show a materially higher mortality than is the average of their respective ages (*Déparcieux*) does not seem to indicate that the frequent sexual intercourse of married life is beneficial to health in a marked degree.

Among the lower classes the opinion prevails and for easily comprehensible reasons is assiduously imparted by the husbands to their wives that sexual intercourse or the frequent discharge of semen is of absolute necessity to the health of the man. Science however cannot subscribe to this. It is absurd to regard the seminal fluid as an injurious secretion which requires regular evacuation like f. i. the urine. There is probably no doubt that part of the semen is not only reabsorbed during sexual abstinence (perhaps in the vesiculæ seminales, *J. Exner*¹); but that this reabsorption seems to have even a beneficial effect on the constitution if we may judge by the experiences of athletes, sportsmen, scholars and artists who feel most fit for work when refraining entirely from sexual intercourse. It has been proved by *Zoth* and *Pregel*² with certainty that the testicular extract of Brown-Sequard has a decidedly beneficial effect on nutrition and bodily strength and that it favours particularly the activity of the nervous and muscular systems. This is evidenced by increased muscular action, a diminished sense of fatigue and enhanced recuperativeness. The development of secondary sexual characters, physical and psychical, are doubtless also due to the reabsorption of the secretion from the seminal glands. Whether it is the direct constituents of the seminal fluid that come into question or, which is more probable judging from the

¹Handbuch der Urologie, ed. by *v. Frisch* and *Zuckerkindl*. Vienna, 1902.

²*Pflüger's Archiv*. Vol. 62, p. 235 and Vol. 69, p. 386.

analogy between the male and the female, another "internal" secretion, is here quite immaterial. In any case, this reabsorption acts favourably, as is also shown by comparing normal men and women with castrated individuals.

Nevertheless it is conceivable that the tonic and irritating influence of the seminal fluid may under circumstances become too strong and that its continued reabsorption may cause a kind of "loading" of the nervous system which requires periodical "unloading" by means of the sexual act.

It is also possible that the reabsorption does not keep pace with the secretion so that injurious congestions of the latter take place in the seminal glands and their ducts which need removing.

To these conjectures it is possible to reply that the testicles behave like all other organs; namely that their blood supply and consequently their activity is increased by use and diminished by non-use. (See the researches of *Lode*¹ on the quantity of spermatozoa in the semen.) Moreover accumulations of seminal fluid are hardly possible as the secretion is generally discharged by means of nocturnal emissions which so long as they do not occur too frequently must be regarded as a physiological process.

There appears to be no doubt that the majority of normal men can no less than women permanently renounce sexual intercourse or the gratification of the sexual desire altogether without suffering any injury. Those who do not believe in the experiences of man may judge from what we see in our domestic animals. Stallions and mares, male and female dogs remain healthy though they are not allowed to copulate.

It is of course presumed that every intentional and artificial excitement of the sexual instinct is avoided, otherwise it is possible for the desire to assume the character of a forcible impulse.

All possible ill-effects have been attributed to continence. In man, nervous irritability, insomnia, headache, a feeling of tension and oppression in the pelvic region, pain in the testicles

¹*Früger's Archiv*. Vol. 50, 1891, p. 278.

and in the spermatic cord, varicocele, morbidly frequent and exhausting emissions, spermatorrhœa (accompanying defæcation), impotence, satyriasis, etc. But most of these manifestations are not due to continence. They are more likely the consequence of sexual over-indulgence, especially reckless masturbation, or as is the case with satyriasis of demonstrable disease of the genital organs themselves or of the central nervous system. As regards the minor ailments which may perhaps to a certain extent really be associated with continence they are easily combated by a hygienically proper mode of life (cold sponging, cold baths, physical exercise, abstinence from alcohol and other irritating substances, a cool and not too soft bed, etc.).

Leucorrhœa and nymphomania in females are likewise hardly ever the product of continence but exceedingly often that of sexual intemperance or unrestrained masturbation. That some diseases which are also attributed to continence as f. i. tumours of the uterus and hysteria have nothing to do with it is sufficiently proved by the fact that they are more often present in married women and mothers than in virgins. The opinion that genuine chlorosis can be cured by marriage and pregnancy has long since been found to be erroneous.

It is true that suicide is more frequent among single than among married persons; but the rarity of love as the inciting cause of suicide (3-6%) tends to show that the ungratified sexual desire plays no important factor in such cases. Moreover, it is very questionable whether all unmarried suicides are chaste.

I have gone so minutely into the question of the injuriousness of continence because many individuals are either permanently or at any rate for a time obliged to forego the idea of marriage; because during married life also long periods occur in which sexual intercourse is impossible or not permissible and because there are unfortunately medical men yet to be found who carelessly recommend non-connubial intercourse to patients, who find themselves in such circumstances, as a means of combating the alleged harmfulness of continence. These practitioners forget the enormous risks of venereal disease to

which they advise their patients to expose themselves—not to speak of the objectionable and immoral character of such council.

It is consequently not the frequent gratification of the sexual desire which constitutes the cause of the remarkable comparative longevity of married men. It may rather be taken for granted that their more orderly and regulated mode of life, the, on an average, lesser abuse of alcohol and the relative infrequency of venereal infection and of its consequences are the factors which play the principal part.

There is of course one other item which deserves mention as apparently contributing to the beneficial influence of marriage. Marriage involves even in our present day a certain selection of the fittest, though not a sufficient one, inasmuch as highly degenerate individuals such as idiots, lunatics, cripples, lame or blind persons, etc., are as a rule excluded from it. The quality of the married class is therefore, to begin with, somewhat better than that of the single class. As a matter of fact it has been attempted to attribute the whole of the difference in the mortality of the two classes to this circumstance alone—but hardly with any justification. Against this one-sided view we must remember that married persons show a lower mortality at all ages—even the highest, whereas the disappearance of the degenerates should on the whole be completed during the earlier years.

It has also been suggested that the case rests upon the economically superior position of those who can afford to marry and that it is only a special result of the beneficial effects of affluence. But this is certainly not true. The bulk of the people marry without troubling much about the future and if any married couples have at the commencement of their married life a certain material advantage it soon gets lost where there are children to be brought up.

That it is not the selection but the married state itself which is the favourable factor can also be seen from the high mortality among the widowed and the divorced. (See Table I.) In any case it is an important fact that the contraction of marriage signifies an increase in the mean expectation of life.

*Prinzing*¹ has calculated for Bavaria that a married man aged 30 has an expectation of life longer by 5 years than a bachelor of the same age, and a married woman in spite of the dangers of pregnancy and child-bed one longer by one year than a spinster of the corresponding age.

b. Advantages to the offspring.—If marriage is an important hygienic institution from the point of view discussed so far, it is even to a greater extent a safeguard to the succeeding generation. The fruit of connubial intercourse is, to begin with, better protected in the mothers' wombs than is the illegitimate child, it has much better chances to withstand the perturbations of labour, better prospects of receiving at the mothers' breasts the nourishment provided by nature and is usually looked after with greater attention during the early years, so full of dangers, as well as afterwards. Herein lies the great interest which society and the State have in marriage and in the prevention of the procreation of illegitimate children. On these points also, statistics show everywhere the same results. The subjoined table gives a comparison of the numbers of stillbirths in different European countries for the year 1893-94.

TABLE II.²

Of 1,000 births there were still births:

	Legitimate Births	Illegitimate Births		Legitimate Births	Illegitimate Births
Italy	39	51	Prussia	32	46
France	44	74	Austria	27	42
Belgium	43	63	Hungary	23	31
Holland	44	81	Denmark	24	32
Wurtemberg	32	35	Norway	27	41
Bavaria	30	36	Sweden	25	32
Saxony	32	41	Finland	26	47

As regards the mortality of children born alive the following figures, worked out by *Boeckh* after a most careful study

¹Allgemeines statist. Archiv. V. 1898.

²Westergaard, loc. cit. p. 348

of the Berlin statistics for the year 1885, will serve as an example:

TABLE III.¹

Berlin, 1885.

Of 1,000 births there survived:

Age	Legitimate	Illegitimate	Age	Legitimate	Illegitimate
Birth	963	943	1 1/4 year.	709	488
1 Month	911	828	1 1/2 "	691	471
2 Months	889	767	1 3/4 "	679	455
3 "	868	716	2 years.	669	446
6 "	813	613	3 "	642	425
9 "	769	557	4 "	624	412
12 "	735	515	5 "	612	405

If we examine into the causes of death among illegitimate children we find that those which emanate from digestive disturbances predominate. And this is easy to understand. For it is obvious that illegitimate children are not as often breast-fed as those born in wedlock and that less care is exercised in their artificial nutrition.

III. Injuriousness of marriage where health is defective or age unsuitable.—Sexual intercourse is hygienically permissible only to such persons who are sexually perfectly mature, healthy and in full vigour, as only from healthy and mature parents can a healthy progeny be expected. If immature persons marry the premature sexual intercourse is as injurious to them as it is to unmarried individuals, and this is proved by the markedly higher mortality among young married people when compared with those that are not married. This difference is particularly noticeable in the case of young men. Thus there died in Oldenburg in the years 1876-85 annually on an average: out of 1,000 single men between 15 and 20 years old, 6.3; out of 1,000 married, 8.7; out of 1,000 unmarried women of the same ages, 5.7; out of 1,000 married, 6.2.

Persons of advanced age should also be dissuaded from

¹Quoted by *Westergaard*, l. c. p. 391.

marrying just like those who are immature. I know quite a large number of cases where men over 50 years of age were no longer equal to the demands of a new marriage: it was particularly the heart and the blood-vessels that could not stand the severe "rush of blood."

IV. The constitution of the offspring dependent on that of the parents.—Of the greatest importance to the succeeding generation is the physical constitution of the parents. This is a fact which is very insufficiently recognised by the laity as well as by the medical profession. It ought to be the guiding standpoint at the contraction of marriages and while exercising the procreative act during marriage, that it is a dereliction of duty to bring children into the world which will probably be the subjects of congenital anomalies, affected with disease, or a predisposition to disease or devoid of vitality and unable to resist against extraneous injuries.

There is no need for me to explain to my medical readers that we are in everything essential the creatures of our parents and of our ancestors, that it is on the whole predestined by the nature of the germs from the combination of which we emanate what we are and what we are to be.

By no means everything that is given us is good! The parental germs themselves may, to begin with, be possessed of inherited deficiencies, or they may have suffered by injuries which affected the parental body, or they may not have been perfect on account of the immature or too advanced age of the parents. I do not mean in this short survey to go at all into the complicated question whether so-called "acquired peculiarities" of the parents can be inherited by their descendants. Though the theoretical interest in this point is very great it has not practically that high importance which has been attributed to it. Thus f. i. the question whether a tuberculous father from whom his descendants have inherited a predisposition to tuberculosis was himself hereditarily predisposed to the disease may be very interesting, but what is practically important is the undoubted fact that tuberculous fathers bequeath exceedingly often a predisposition to tuberculosis.

I will now enumerate, briefly what we know of the injuries to and the deficiencies of the germ-substances which are transmissible to the progeny:

a. Age of the parents.—Where the parents are much too young (mother under 20, father under 27) the children are not infrequently delicate; malformations and idiocy are also more frequent among the children of young parents than among those of the fully mature.

Equally unfavourable is advanced age of the parents (mother above 40, father above 50). It is worth mentioning that very young mothers and those approaching the climacterium are more prone to give birth to twins than women in their prime.

b. Number and rate of successive pregnancies.—All that weakens the organism of the parents acts in the majority of cases debilitatingly on the descendants also, and this is particularly the case where the mother is delicate, either because the ovum possesses little vitality or because the nutrition of the embryo is insufficient. It is here necessary to point out that the maternal organism suffers in a manner calculated to injure the descendants where pregnancies follow each other too rapidly or where they are too numerous. Statistics of infantile mortality show that on an average the third and fourth child of the same woman are the strongest and that beginning with the fifth, sometimes with the fourth, their vitality diminishes pretty rapidly. The unfavourable influence is especially great where pregnancies follow each other within one year. *Westergaard*¹ has worked out that out of 100 children who were born within one year after a brother or a sister 19.9 died before they reached their 5th year; but out of 100 who were younger by more than two years, only 11.8. Even those children who were born between one and two years after their predecessors showed a fairly higher mortality than children who followed after a longer interval. Pregnancies should therefore not succeed one another more rapidly than at intervals of two and a half years. Only thus it is possible for a mother to suckle her children sufficiently long.

¹Loc. cit. p. 371.

c. Economic conditions.—If the younger children of prolific marriages are on an average weaker than the older ones, this is partly due to economic conditions. The greater the number of children the more difficult it becomes to provide them with sufficient and good nourishment and to bring them up with the necessary care. For this reason also the unrestrained and proletarian procreation of children is open to objection. There should be no more children brought into the world than can presumably be fed and reared.

d. Diseases of the parents.—Many chronic and exhausting diseases are productive in the descendants of feeble vitality, diminished resistibility, slow and incomplete development, and sometimes of diseases or predispositions to disease which are characteristic of the respective parental conditions.

This applies especially to certain chronic metallic intoxications (as f. i. lead-poisoning) which are harmful to the children if either the father or the mother suffers from them, syphilis, tuberculosis, mental and nervous diseases, alcoholism and morphinism.

It is well known that syphilis can be transmitted directly from parents to children, thus giving rise to congenital secondary or tertiary lesions. The infection may proceed either from the father or from the mother. But even when they do not actually receive the infective virus, the children suffer through the parental syphilis, as is proved by the large number of miscarriages and still-births and also by the great infantile mortality and by the frequent occurrence of stunted and backward children among the offspring of syphilitic individuals. It has already been mentioned that such children are frequently highly predisposed to tuberculosis.

The children of tuberculous parents become themselves very often tuberculous. It is probably very seldom indeed that they are infected with tubercle bacilli directly at the conception or during pregnancy, as is the case with syphilis and some other infectious diseases such as small-pox, scarlet fever, etc.; at least it would seem so judging from the exceedingly small number of people affected with congenital tuberculous processes of a manifest character, and also from the fact that not in one single

case has an inherited infection been traced to the paternal semen. To some extent the frequency of tuberculosis among the children of tuberculous parents is probably due not so much to direct hereditary transmission as to the circumstance that in their extra-uterine life such children are as a rule in a very marked degree exposed to the danger of infection.

It would however in our opinion be altogether wrong to attribute the occurrence to the last-mentioned factor only. It seems to us to be established beyond doubt that the children of tuberculous parents are not only very often of weakly constitution and ill developed like the children of parents suffering from any chronic disease, but that they possess a specific inclination to tuberculosis. This view derives support from those well-known sad cases where all or almost all of the children of a family succumb more or less rapidly to tuberculosis after having reached apparently in perfect health the second or third decade.

Very often indeed the whole physical constitution of descendants from tuberculous parents is so characteristic that we speak of a tuberculous habit of body or diathesis; tall stature, long and flat thorax, overhanging shoulders, weak muscles, a poor general state of nutrition, a small heart, narrow blood-vessels, irritability of temper and limited nervous endurance.

An incontestable fact is also the frequent hereditary transmission of a predisposition to mental disturbances and nervous diseases from one generation to another. What is characteristic in these cases is the extraordinary diversity of forms which the disease assumes and in which the inherited degeneration or deficiency of the nervous system becomes apparent. All kinds of nervous disease may be noticed, from light manifestations of irritability, eccentric tendencies and hypochondriasis to the severest forms of epilepsy, insanity and idiocy.

It cannot be sufficiently emphasized how injurious the abuse of alcohol is to the succeeding generation. This harmfulness of alcohol manifests itself on the one hand like that of other poisons by a generally impaired vitality, development and resistibility of the child and again specially in a severe derangement of the nervous system which is apt to assume the most variable forms.

e. Inherited defects of the germinal cells.—

Certain morbid predispositions are inherited from generation to generation and are doubtless based upon some specific defect in the embryonic elements. It is however particularly worth mentioning that a link in the chain of the generations may now and then escape the disease though the predisposition to it has been latently inherited, as f. i. by grandchildren from their grandparents, etc. (atavism).

Here again mention must be made above all of the mental and nervous diseases which often cling tenaciously to some families. In all the severe cases of inherited predisposition the degeneration of the germinal elements is already evidenced by outwardly noticeable anomalies, the so-called signs of degeneration. Hereditary from generation to generation is further a predisposition to certain metabolic disorders; this is particularly the case with gout and also with jaundice, renal calculus, diabetes mellitus, diabetes insipidus, alkaptonuria and cystinuria.

There is also an inherited predisposition to cancer, to premature arteriosclerosis and consequently apoplexy, to emphysema of the lungs and to certain skin diseases. It also seems that a tendency to tuberculosis can be hereditary through several generations.

A most remarkable phenomenon is the hereditary transmission of certain malformations which affect either single organs or extremities only, or the entire body. To this category belong the presence of supernumerary fingers or toes, hare-lip, cleft palate, non-development of the female breast, dwarfs, giants, myopia, colour blindness, hæmeralopia, hereditary cataract, atrophy of the retina and retinitis pigmentosa, warts, birth-marks (nævi), neuromata, neuro-fibromata, cartilaginous exostoses, progressive deafness in consequence of sclerosis, deaf-mutism, hæmophilia, etc.

f. Consanguinity.—It is in the hereditary transmissibility of certain predispositions to disease and malformations where the danger of procreation among blood-relations lies. Such procreation is not *per se* injurious or only so when it is continued through many generations in which case the mar-

riages may prove sterile. The disadvantage is that near relations possess the same inherited predispositions and that a combination of these injurious influences may attack the embryo. On the other hand there is an unfavourable element in the union of two individuals who spring from races too wide apart as is proved by the limited fruitfulness of such marriages f. i. of those between Jews and Christians.

V. Choice of husband or wife.—The choice of a husband or wife is therefore an exceedingly serious matter. But there should not be any exaggeration about it. No one is perfectly normal and entirely free from inherited predisposition to disease. Undue anxiety would result in there being no marriages at all. It must also be borne in mind that just as in certain families morbid tendencies increase (degenerative heredity), so in others they diminish; that by a suitable mode of life it is possible to arrest certain predispositions in certain individuals (this applies f. i. to mental diseases and tuberculosis in a very marked manner); and particularly, that by a continued pairing with descendants of healthy families abnormal predispositions may be annihilated altogether; provided always that the degeneration of the germinal elements has not gone too far.

We may therefore lay down something like the following as a rational guide:

People afflicted with serious malformations, degenerates such as idiots, imbeciles, lunatics, epileptics, drunkards, habitual criminals and chronic sufferers, such as tuberculous persons and syphilitics in the secondary stage, should absolutely be excluded from procreation. Equally unsuitable as procreators are individuals whose physical development is not complete or whose sexual character is imperfectly marked. It is particularly necessary to dissuade from marriage women with poorly developed breasts and hips, women who have never menstruated or menstruated irregularly and women with ill-developed and imperfect pelves as a consequence of rickets. In fact only such persons should beget children who are perfectly healthy, strong and well-nourished. Individuals who are either too young or too old are unsuitable for procreative purposes.

the former it is at least necessary to warn against the great risk of infection if it is not possible to prevent the marriage altogether. Persons who have suffered from syphilis or gonorrhœa must under no circumstances marry or indulge in sexual intercourse at all until it is absolutely certain that they are no longer contagious. On this latter point it is regrettable to have to say that many medical men act with unpardonable carelessness or lamentable ignorance. No practitioner should allow a syphilitic individual to marry and beget children before the expiration of at least three—or better still four—years from the commencement of the illness, and then only if the treatment has been a thorough one and no symptoms whatever have shown themselves for at least one year. As to gonorrhœa, there is hardly a medical man who does not know that gonorrhœa in the female when it has once attacked the internal organs is practically incurable and that the chronic condition in the male may continue for years with such slight manifestations that it is possible only by very frequent and most searching microscopic and endoscopic examinations to obtain conclusive proof of its disappearance. It is well known that such chronic and hardly recognisable gonorrhœas are capable of producing in healthy women most virulent acute attacks of the disease. The responsibility of the practitioner is therefore enormous when giving his permission to a patient, who has had gonorrhœa, to marry. He is entitled to grant that permission only after having exhausted all the means at his disposal which can enable him to arrive at a definite conclusion.

With regard to the mode of life of married individuals it is the duty of the physician to make it clear to them that they must consider their health not only for their own sakes but that they should avoid everything that is likely to injure it for the sake also of the expected offspring. The medical profession ought, from this point of view, to oppose to the best of their ability the constant round of pleasures of which people are so fond and also the habitual indulgence in alcoholic liquors or other narcotic substances.

Tight-lacing should be opposed, as it may act injuriously especially on the embryo.

III

Congenital and Inherited Diseases and Predispositions to Disease

All the circumstances which preclude marriage preclude as a matter of course the procreation of children if they arise after a marriage has taken place.

The practitioner will do well in all cases where the procreation of children is permanently or temporarily contra-indicated; to recommend genuine sexual continence. All preventive practices which permit sexual intercourse while avoiding conception seem, if carried on for any length of time, to cause more or less injury, and most of them are also unsafe. This subject will be dealt with more minutely in a subsequent chapter; it is sufficient to point out here that it is the more important for the practitioner to be very careful in recommending these practices as they are apt to find their way to healthy individuals, thereby causing injury to them as well as to the community by preventing the creation of a vigorous progeny in numbers commensurate to the strength and greatness of the nation.

III

Congenital and Inherited Diseases and Predispositions to Disease

III

CONGENITAL AND INHERITED DISEASES AND PREDISPOSITIONS TO DISEASE

By Professor J. Orth (Berlin)

IN order to obtain a clear conception of the occurrences and significance of congenital and inherited diseases and predispositions to disease, it is in the first instance necessary to possess a notion as to the meaning of the words "inherited," "congenital," "disease," and "predisposition to disease." This is the more requisite as medical terminology unfortunately does not in this matter afford us any definite rules and logical conclusions, and as, particularly in the case of the designation "predisposition to disease" or "predisposition" it has often been remarked that where conception is at fault a good name goes a very long way. The well-known saying of Bacon, "*Prudens interrogatio est quasi dimidium scientiæ*" might very well be altered into "*Prudens definitio est quasi dimidium scientiæ*." I shall therefore try first to render the ideas intelligible and will afterwards deal with the occurrence of congenital and inherited diseases and predispositions to disease in general, but with special regard to the question of heredity and its importance in pathology.

The meaning of "inherited" and "congenital."—The words "inherited" and "congenital" are often used synonymously, but there is no justification for it because although everything inherited is also congenital, it does not necessarily follow that everything congenital is also inherited. The opposite of "inherited" is "acquired." Acquisitions are either extra-uterine or intra-uterine; if the latter they are congenital, but not inherited.

All is congenital that is present in or about an individual at the time of his or her birth. It is not essential that the congenital peculiarities shall be recognisable in the newly-born infant immediately after birth, either by an external or by an internal examination; there may be, to begin with, a latent condition from which the particular abnormality or peculiarity emerges at a subsequent period, perhaps after many a year, and which though not recognisable at birth is nevertheless inherent in some shape. This applies to normal as well as to abnormal qualities. Whether a newly-born infant is of the male or of the female sex is under ordinary circumstances visible immediately after birth, but the development of the sexual glands or of the female breast respectively does not take place before puberty; and as to pubic hair or the beard there is not at birth a trace of them, yet we do not doubt that they are congenital phenomena, and that their origin dates from birth.

Such latency, such an appearance of peculiarities later in life is not seen only in the development of the sexual attributes or in connection with general conditions but also in individual qualities and especially in family characteristics. Certain peculiar family features are at times decidedly recognisable in newly-born or very young children; there are however a number of peculiarities as f. i. the general build, facial expressions, the nature of the hair, and also functional distinctive phenomena and proclivities, etc., which make their appearance at a subsequent period and as to which no one has any doubt that they are congenital possessions.

The matter is no different as regards disease. It is f. i. well known that syphilis is capable of producing intra-uterine symptoms which are recognisable immediately after birth, that in most cases undoubted signs of the disease become apparent at least soon after birth, and that there is consequently a congenital syphilis. But it may also be considered as a fact that there is a "late congenital syphilis,"¹ a form of the disease the symptoms of which do not become apparent until perhaps many

¹A restriction follows later on.

years afterwards, though its cause must have been latently present in the body of the sufferer from the time of his birth. The syphilitic infection is in such cases necessarily congenital and the disease itself which is sometimes, though not with certainty, recognisable, was either present at birth (latent syphilis) or at least prepared (latent syphilitic infection). The same thing may happen with respect to obesity, giant growth, gout, etc.

What is not inherited.—What is to be regarded as inherited in these congenital phenomena? Surely not that which has arisen in consequence of disease in the fœtus (*f. i.* intestinal obstruction due to a cicatrix following an intussusception) or through abnormalities in the ovum (such as constrictions or amputations by amniotic bands or coils of the funis, growth into the placenta, etc.); as for these conditions the maternal organism has no direct responsibility. Nor can we regard as inherited, anomalies in which the uterus is secondarily involved, as for instance fœtal deformities resulting from pressure produced by deficiency of liquor amnii. But I go further still, and maintain that what the fœtus receives from its mother in the course of its development is not inherited, because the essence of heredity does not consist of the circumstance that the descendants have obtained a particular peculiarity from their ascendants or that a disease has been transmitted to them by their parents or even their ancestors. If a hitherto healthy child is through kissing or in any other way infected with syphilis by its parents nobody would think of calling this hereditary syphilis any more than he would consider as hereditary tuberculosis a case where a child born free from this disease becomes tuberculous through his parents, grandparents or any other relatives. If a mother transmits at any time during her life some acute infectious disease to her child nobody ever thinks of mentioning the word "inherited," yet why should it be otherwise when the transmission has taken place not during extra-uterine but during intra-uterine life?

Placental infection.—There can surely be no difference in the essence of the process because the placenta has played an intermediate part, that is, because the infection is a placental

one. Whether it is through the milk that a mother conveys morphia to her nursling, whether it is through a tuberculous udder that a cow conveys tubercle bacilli to her calf or whether that conveyance takes place through the blood of the placenta, it cannot make any appreciable difference. And if any one holds the extraordinary opinion that conveyance through the milk is an hereditary transmission, what about the milk of a tuberculous cow that infects with tuberculosis not her own calf but a strange one or a human suckling? The essence of infection cannot be any different if under exactly similar circumstances it attacks different individuals. But if conveyance through the milk cannot be called hereditary transmission why should we speak of such when the conveyance takes place through the blood? Such a conveyance as *Lubarsch* rightly says is only a special kind of metastasis, a metastasis in another individual, but in reality nothing more than what takes place when an infective agent is transmitted from one individual to another by injection into the blood. Where have we here a hereditary transmission? And how about infection during labour? How far does heredity go and where does acquisition begin?

There are, to begin with, general biological reasons why we should not consider as hereditary all that is derived from the mother during intra-uterine life. In the amphigonous propagation of the species the value of the male germ is for hereditary purposes equal to that of the female, for we see how anxiously—if we may use such a term—nature looks to it that at the fecundation of the ovum the future new creature shall receive just as much chromatin from the paternal as from the maternal germ. Though it is not by any means proved as yet that the chromatin is in any way the carrier of heredity its behaviour gives us a sure indication as to the general nature of the paternal and maternal potency, of the paternal and maternal inheritance. Were we to admit post-conceptional influence on heredity on the part of the mother the value of the maternal progenitor with regard to heredity would be quite different from that of the paternal; in such case the mother would be capable of transmitting hereditarily much more than the father. In any case this could happen only in viviparous

animals, and particularly in mammals, and not even in all of these to the same extent because in aplacentals the conditions are entirely different than in placentals. If in the discharged egg of an animal changes take place in the developing embryo owing to external influences, it is perfectly clear that we have before us not inherited but acquired conditions,—is there any material difference if the same changes occur in an egg while it happens as yet to be situated inside the genital organs of the mother? Tubercle bacilli have been introduced into hens' eggs and tuberculosis thereby produced in the chicks—this is surely no inherited tuberculosis; and wherein does the difference lie if tubercle bacilli, the syphilitic poison or other causes of disease are transferred from the mother through the placenta to a human embryo before its full development? We have no more right in such cases to speak of inherited tuberculosis or inherited syphilis than in the above-mentioned experiments on chickens.

And how about those animals which are oviparous as well as viviparous? Is in their case the possibility of hereditary transmission a variable one, that is smaller in the offspring discharged with the egg and greater or more lasting in those that are born in an advanced state of development? No, all that the offspring receives in the course of its development after conception is acquired and not inherited, no matter at what period received, whether intra-uterine or extra-uterine, no matter in which way, whether through the blood, through the milk or otherwise.

What is acquired.—Everything is acquired that arises through the influence of external agencies on the developing or fully developed individual, and for the fœtus in its mother's womb every agency is external that proceeds from without it, whether it be situated within the maternal body or outside of it. The fœtus is in this respect not a part of its mother's viscera, but an independent being possessing its own life from the very beginning. A white woman with child by a negro carries in her womb a mulatto fœtus which can be no portion of the maternal body as it is not possible for a white person under normal circumstances to have one part of herself so

different in racial type as a mulatto foetus is from a pure white. We therefore arrive at the following conclusion: All that an offspring receives from its parents after conception is acquired; whatever it receives after birth is an extra-uterine acquisition, and that received during its sojourn in the uterus an intra-uterine one; the latter being present at birth is consequently congenital, but it has in a scientific sense absolutely nothing to do with heredity.

What is inherited.—What has just been said practically includes what we understand by "inherited," for there is only one meaning possible; only that may be regarded as inherited which has been imparted to the offspring through the germinal cells. This applies to normal as well as to pathological heredity. It is true that pathological heredity presents some peculiarities and points which do not arise in normal heredity, but on the whole there can possibly be no difference between them. To call one kind of heredity biological and the other pathological is in so far incorrect as pathology also is biology, and as the general biological principles apply to pathological processes the same as to normal. But the most important biological principle as regards heredity is that the offspring derive their inheritance from their ascendants through the germinal cells.

As to the parts played by the chromatin substance, by the nucleus as a whole, or by the cellular body, these are special questions into which I cannot enter here particularly as they and similar others are still awaiting final solution. For our present purposes it is quite sufficient to state that the bearers of heredity cannot possibly be situated outside the germ-cells but only in their interior, that they are firmly bound to the molecular constituents of the germ-cells with whose internal structure they are most closely connected. The substance which is the bearer of the inheritance has been designated as idioplasma or germ-plasma—the latter expression introduced by *Weissmann*¹ is the one mostly in use—and we can therefore formulate the maxim with regard to heredity, also as follows: Only through the germ-

¹*Weissmann*, Ges. Aufs. über Vererbung. 1902.

plasma does a descendant inherit from an ascendant, only that which has passed to the descendant through the germ-plasma can be regarded as inherited.

Germinal infection is not heredity.—Consequently there can be no question of heredity when the new individual receives something which has been introduced accidentally by the germ-cells, if f. i. a spermatozoon enters into the ovum which it impregnates, or in other words into the future embryo, accompanied by a tubercle bacillus. It is immaterial whether the bacillus adheres to the exterior of the spermatozoon or whether it lies in its interior, if there is room, provided that the molecular structure of the spermatozoon, that is the germ-plasma, has undergone no important change. Such cases have been spoken of as hereditary tuberculosis of the fœtus, but without any justification, as the germ-cells have not produced the tuberculosis; they were merely the accidental carriers of the infective virus. We may therefore speak in such a case of a germinal infection, as opposed to the placental infection discussed above, but this can never be an inherited tuberculosis; we might at the utmost speak of pseudo-heredity. The best illustration of this is furnished by *Friedmann's*¹ experiments on germinal tuberculous infection in rabbits. By injecting immediately after the copulation of two healthy animals a broth of artificially cultivated tubercle bacilli into the vagina of the female animal, so that it became mixed with the seminal fluid, he succeeded in finding tubercle bacilli in the embryos of the first week, especially of the sixth day², but only in them and not in the maternal body. And though tuberculosis could not be shown to exist³ there was the beginning of it, an infection with tubercle bacilli, and no one will doubt that it came into the ovulum, and thus into the embryo, along with a spermatozoon. We may therefore speak of a tuberculous infection produced by germ-cells, but would it occur to any one to call this an hereditary infection or hereditary tuberculosis, should

¹F. F. Friedmann, Exper. Stud. über die Erbllichkeit der Tuberkulose. Zeitschr. f. Klin. Med. Vol. 43, p. ii. 1901.

²Later also, as I am informed.

³I am informed that subsequently there were also none.

the fœtuses really become tuberculous, that is develop tuberculosis, although there was nothing tuberculous to inherit from the parent animals? And would it be any different if the tubercle bacilli were not added artificially to the spermatid fluid but came from the same organism as the latter? Certainly not. There is just as little heredity in the one case as in the other and if a human fœtus were to receive from its father an infective virus along with the spermatozoon this would no doubt constitute a germinal infection, and if the child is born infected, a congenital infection, but as to heredity the whole process would have absolutely nothing to do with it. And what has been said with respect to the paternal germ-cell applies equally to the maternal one, the ovum. Only when the germ-cells have undergone an alteration in their internal construction, in their composition or perhaps only in their chemical constitution, if new peculiar conditions arise thereby in the body of the new individual—which *Weissmann* rightly designates as the soma, in contra-distinction to the germ-plasma, the bearer of heredity which as we have seen is contained only in the sexual or germinal cells—it is only then that we can speak of hereditary phenomena.

The meaning of disease and predisposition to disease.—I will now attempt to explain the meaning of the words "disease," "tendency to disease" or as it is usually called "predisposition to disease," and this I can do very briefly.

Disease is a process, a vital process, but one deviating from the normal and showing signs of injury; disease is life, but life under abnormal conditions and with abnormal aspects; where there is no life there can also be no disease, where there is no disturbance of vital processes showing signs of injury, there is also no disease. The external cause of a disease as f. i. parasites may be present, there may be an infection, but an infectious disease as a consequence of that infection¹ does not begin until the parasites occasion disorder in the vital processes, until the latter are injuriously disturbed. It is absolutely necessary to

¹Serious misunderstandings are apt to arise if, as it is often done, no sharp distinction is made between infection and infectious disease, and if the disease as such is also called infection. The latter term in reality only means "contamination."

distinguish between the notions "cause of disease," "parasites" and "disease." A man may harbour in his mouth virulent diphtheria bacilli without being ill; he has no diphtheria, he is not diphtheritic, although he carries about with him the causative agent of diphtheria and although he can make others diphtheritic by conveying to them those causative agents. The rabbit-embryos of *Friedmann* contained tubercle bacilli but they were not tuberculous as there were no demonstrable signs whatever of disordered vitality, no morphological changes and no disturbances of development. If there has been in any particular case a congenital transmission of the cause of a disease we are not justified in speaking of a congenital disease as long as there are no demonstrable morbid disorders of vitality. We can only speak of a congenital infection, because in my opinion infection begins with the transmission of active and living parasites. It is true that the usual form of speech does not in cases where a disease springs from an infection differentiate very accurately; we speak f. i. of a late congenital syphilis though in reality this is not quite correct as the syphilis as such, that is the disease with all its symptoms is not present, or at least not noticeable at birth and as nothing but the cause of the disease is latently inherent. The circumstances are here totally different than in the case f. i. of the secondary sexual characters, because these are already formed at birth, whereas of the disease there is nothing present and its commencement dates from a subsequent period.

As to what is to be understood by tendency to disease or predisposition to disease, opinion is very much divided. This is evidenced by the literature on the subject. In my judgment it ought to be taken for granted that what comes here into question are bodily conditions, the peculiarities of the build, of the chemical composition and of the activity of the organic tissues and the qualities of the individual constitution.

The human body is not without protection at the mercy of external causes of disease and particularly at that of parasites; on the contrary it possesses quite a large number of protective agencies partly morphological and partly biological which, being to a great extent regulating arrangements, enable it to

offer resistance to abnormal conditions of life and to external causes of disease the tendency of which is to generate disorder in the vital processes, viz.: to produce a disease; they enable it to render those causes abortive and thereby maintain the normal course of the process of life. Everything which prevents that regulation from taking place, every incapacity of the body to resist external causes of disease, therefore, every peculiarity of the constitution which renders the latter unable in the struggle of the body with the causes of disease to maintain the normal course of the vital phenomena, every such peculiarity of the constitution may be designated as a tendency, as a predisposition to disease. There need not in this connection be any deviation of individual constitutions from the type of constitution of human beings as a class, there may be also typical general characteristics of constitution which though normal in themselves may represent dispositions to disease in so far as they tend to favour the origination of some particular disease or in so far as they are not capable of preventing that origination. Such are the predispositions to disease which appertain to the human body as opposed to the bodies of animals; such the predispositions by which various groups of humanity are distinguishable in a regulated manner from one another according to age, sex or race. All these predispositions to disease must be congenital and inherited, for they are a result of the phylogenetic development, they have their origin in the general characters inherent in the germ-cells.

There is however a difference as regards those peculiarities of constitution by which an individual distinguishes himself from the type of man in his normal state, which belong to him personally and which constitute his own individual personality. These are individual predispositions to disease which we designate as family predispositions when the same special peculiarities of constitution appear in several members of one and the same family. Of course not all individual peculiarities of body, not all family peculiarities of body, are predispositions to disease: they are so only in so far as they do not prevent the production of disease or in so far as they tend to favour it.

This conception of what constitutes predisposition to disease

does not contain anything mystical; it is not beyond the domain of science, and is just as capable of scientific treatment as any other pathogenetic question, though we must admit that our knowledge of the predispositions to disease does not go much beyond a few generalities.

Congenital and inherited diseases.—In coming now to the general answer to the question whether there are congenital diseases and how much heredity has to do with them, it is not necessary for me to mention that there are such diseases, as this is so well known. I only wish to point out again that strictly speaking we can call a disease congenital only if the disturbance of the vital processes which constitutes the nature of the disease was already present at birth. If that disturbance appears later it was obviously not present at birth and what was then present was at the utmost its cause only. But the cause of a disease and the disease itself—this cannot be emphasised too much and too often—are not one and the same thing. In the majority of cases it is congenital infectious diseases that we meet, anthrax, pneumonia, relapsing fever, sepsis, typhus, small-pox, syphilis, tuberculosis (rarely), leprosy, cholera (presumably), articular rheumatism, malaria, measles, scarlet fever, but there may also be foetal diseases of another kind. By far the greatest number of all foetal diseases, whatever their nature may be, make their appearance only during the development of the foetus in the earlier or later months of pregnancy; an hereditary transmission of the disease is therefore out of the question. But it is highly probable that even in those congenital diseases which are of germinal origin, heredity, in a scientific sense, must, after what has been said above, be excluded, inasmuch as it is almost exclusively infectious diseases that come into consideration. It would be possible to speak of an inherited disease only where one or both of the germ-cells were specifically diseased, but this is hardly likely ever to occur in practice seeing how improbable it is that diseased germ-cells could give life to a regularly developing embryo. Nevertheless the further evolution of an embryonic structure emanating from a diseased germ-cell is not altogether impossible, and it is quite conceivable that the general ill-

development, the general want of vitality, the dystrophy so frequently observed among the offspring of syphilitic parents, may be due to the fact that the germ-cells were somewhat damaged and to a certain extent affected with syphilis. But such a conclusion is by no means necessary as all these conditions might very well have been produced at a later stage in the foetal body by toxins arising from the syphilitic virus. The observation that the danger of transmitting syphilis to the embryo is greater in proportion to the acuteness of the symptoms in the parents, may be explained either by a gradually diminishing injurious effect on the germ-cells or by a gradually diminishing virulence of the infective virus.

We may therefore draw the inference that undoubtedly by far the greatest number of congenital diseases are not hereditary and that in all probability there are no hereditary diseases at all. As regards especially the most important diseases namely those due to infection there are no doubt congenital infectious diseases produced by placental—now and then also perhaps by germinal—infection, but no such hereditary diseases.

Congenital and inherited predispositions to disease.—The conditions are totally different as regards the predispositions to disease. The general ones do not of course concern us here; we have to consider only the individual and the family predispositions. As we are not thoroughly familiar with the finer conditions, morphological as well as biologically-chemical of those constitutional peculiarities which must be regarded as the principal predispositions to disease and which may either date from the first stages of the embryonic structure (dispersed germ-cells, incomplete differentiation, etc.), or arise at a subsequent period of the development, we are not generally in a position to demonstrate them objectively but must infer them chiefly from their results and from their action; and such inferences must always be treated with the greatest discrimination. Here we are, however, often confronted with the difficulty that it is not always by any means quite clear what is to be regarded as cause and what as effect, what as predisposition to disease, and what as a consequence of disease. In no other disease is this difficulty so markedly apparent as in tuberculosis.

Hereditary predisposition to tuberculosis.—Heredity has always been supposed to play an important part in this disease, and—particularly since the discovery of the tuberculous virus and the recognition of its bacillary nature—numerous pathologists and physicians have attached very great value to a congenital and hereditary predisposition to it. It was at first believed that that disposition lay in the so-called scrofulous constitution, but this opinion proved to be to a great extent erroneous, as it has been shown that much (perhaps all?) of what was designated as “scrofulous” is nothing but a tuberculous process. But are we justified in denying all congenital general predisposition to tuberculosis? That germinal transmission of tubercle bacilli, in other words a pseudo-heredity, plays any important part at all is admitted by few pathologists; most of them attach the greatest weight to extra-uterine infection and there is no doubt that much of the hereditary aspect of tuberculosis is due to the circumstance that ascendants constantly infect their descendants and that as a consequence of this infection several successive generations of the same family are attacked by tuberculosis. On the other hand if we bear in mind how very prevalent tuberculosis is, and that it is hardly possible for any one to avoid exposing himself repeatedly to the danger of infection, if we consider how many individuals carry in their bodies traces of tuberculous disease without suffering from severe local or general tuberculosis, we cannot refuse to recognise that in those individuals who do suffer severely from the disease, and particularly in those frequent cases where at certain periods of development, during puberty, tuberculosis makes such rapid progress and is so soon fatal, there must be some other general constitutional peculiarities playing an important part, the more so as often enough the tuberculous parent dies at an early age and there is consequently no continuous family infection present at all. We are thus impelled to think of the variable general susceptibility of different animals, to remember that even among animals of the same class there are different races with different susceptibilities, that among animals also there are doubtless individual differences of susceptibility, and therefore an individual predisposition of a general

kind to tuberculosis. From this we must further conclude that in man as well there is latent a general predisposition to tuberculosis, and that in many family-tuberculoses this predisposition is inherited; and I see no objection to this same general predisposition being called by the name of "scrofula."

But there are in tuberculosis, besides the general, also local constitutional peculiarities, and with regard to these the same question arises, viz.: how far are they to be considered as consequences of the disease and how far as primary congenital predispositions to disease.

That many tuberculous individuals—this is especially noticeable in early youth—are narrow-chested and characterised by a contracted and flat thorax is an undisputed fact; but whether this so-called phthisical thorax was present previous to the tuberculosis, or whether it is a consequence of preceding tuberculous changes in the thoracic organs, these are questions upon which opinions are still very much at variance. If, as I consider it to be correct, the thoracic malformation is the primary event and something congenital, may it not have arisen because some phthisical ancestor acquired such a thorax, and because this acquired new condition was inherited as a predisposition to phthisis? Is there such a correlation between the bones of the thorax and the germ-cells that the alteration produced by disease in the former is to a certain extent reflected in the latter?

The discussion, started some time ago by *Freund*, and recently resumed, as to the significance of a special shape of the upper aperture of the thorax, and particularly as to the length and situation of the first rib, in connection with the origin of tuberculosis in the apices of the lungs will, to my mind, have to end with a general admission that the condition is certainly not a consequence of existing tuberculosis, but a congenital primary predisposition to apical phthisis. But who dares to decide whether the special shape of the first rib owes its existence to some primary germinal variation due to some cause or other, or whether it represents a primary somatic variation? There can be no doubt as to the primary nature of the predisposition in those cases in which a congenital narrowness of the pulmonary

artery has been the basis of a tuberculosis of the lungs; we may here safely admit that the severe congenital anomaly has favoured the production of the subsequent disease.

Other congenital manifestations of disease.—

We can find many other similar examples, as for instance the frequency of morbid changes in retained testicles or in other organs in an abnormal state of development. We may also call attention to the physical so-called signs of degeneration in individuals affected with an hereditary predisposition to mental disorders. These signs of degeneration are at least in part, probably secondary phenomena only, consequences of the altruism prevailing in the body as a whole, or, as *Roux* says, of the struggle between parts of the body, the effect of which is that changes in one part cause disturbances in other parts also—but they are nevertheless visible signs of an alteration in the constitution.

In numerous cases where family diseases, and especially also metabolic disorders, are present (congenital obesity, gout, diabetes, etc.), we have hardly any indications as yet of the hereditary constitutional abnormalities upon which they are based and which produce the predispositions to them. We know just as little with regard to those predispositions which rest on non-inherited disorders of development, as for instance tumours, for the causes of which many pathologists look in such processes as germinal misplacements, etc. It must therefore be the object of science to find out by careful research which deviations in the structure and chemical composition of the human body should be considered as congenital foundations of predispositions to disease. It is well, in this connection, to remember that it is not necessary for even the congenital constitutional peculiarities, that is the predispositions to disease, to be quite complete at birth; they may become so at a later period of development. *Vice-versâ*, not every pathological condition in young children (smallness, atrophy, dystrophy, anæmia, etc.) must be regarded as congenital, inasmuch as unfavourable external circumstances are in themselves sufficient to produce such abnormalities. Only when we shall have become familiar with the exact morphological principles, it will be possible to attempt an answer to

the second question with better prospects of success than we have at present, only then we shall be able to say how far such congenital predispositions to disease may be regarded as inherited, and how far the hereditary transmission of acquired peculiarities comes here into question.

Hereditary transmission of anomalies and malformations.—That particular physical peculiarities may be transmitted hereditarily is amply demonstrated by certain anomalies and malformations. Though they are not necessarily diseases or predispositions to disease they are nevertheless pathological conditions, deviations from the normal build of the human body, which we cannot here leave unnoticed, as they are typical of the proper predispositions to disease.

If we hear for instance that hexadactylism has been present through several generations, that a whole village (*Eycaux, Isère*)¹ in which the inhabitants have intermarried for a long time consisted finally almost entirely of six-fingered individuals and that the anomaly commenced to disappear as soon as marriages with outsiders became more frequent, thus introducing fresh germ-plasms, we are obliged to admit that the case must be one of inherited anomaly though the possibility is not altogether precluded that there were also other factors concerned which must necessarily have been present when the anomaly occurred for the first time.

In the case of hexadactylism, the anomaly has been referred to as an atavistic phenomenon,² though as *Gegenbauer* has shown, quite unjustly, but even if it were so, there must also have been some special reason why the reaction occurred in one particular individual. Besides, similar conditions as in polydactylism occur also in syndactylism, peromelia, daltonism, and other anomalies, in which an atavistic explanation is out of the question and as to which we may say with certainty that the persons who showed these malformations first did not inherit them; the anomalies must consequently have been produced by other circumstances and these same circumstances

¹*F. Detry*, Du Danger des mariages consanguins, 1862. ref. Arch. gén. de med. 1863. I p. 763.

²For details see further on.

could very well retain their activity through subsequent generations. We are compelled to think of such complications in connection with the remarkable case of *Struthers*¹ where four generations were required to produce complete polydactylism (in the hands and in the feet). In the first generation there was a sixth finger in one hand, in the second generation in both hands, in the third generation three brothers had six fingers to each hand and one of them in addition a sixth toe in one foot, and the descendants of this one, that is the fourth generation, had six digits to each hand and foot. The explanation which has been given of other cases, in which there is an aggravation of the peculiarity in the second generation, and which appears quite admissible, is here not sufficient. It has been assumed that the cause which produces the corporeal anomaly acts upon the germ-cells at the same time and in a more marked degree, so that the descendant emanating from these germ-cells presents the same anomaly in an aggravated form. It would therefore be possible in the above observation to account for the appearance of a severer polydactylism in the second generation by admitting that the original cause effected not only a somatic disturbance but also a specific alteration in the germ-plasma. But the progression of the malformation through four generations appears to be impossible unless we recognize the existence of a continuous, specific causation, especially as there was no hereditary predisposition through the other parent. The matter is still more complicated because of the fact that in this case like in many others, the malformation was not by any means present in all the descendants. We must therefore be very careful when expressing an opinion on the hereditary transmission of malformations and abnormalities, and bear in mind above all that occasionally, as I have already mentioned, such occurrences are not the primary event, but something secondary, something consequential, something necessarily dependent on a primary condition. Where the latter is inherited the consequential result is also bound to make its appearance, though it has not itself been hereditarily transmitted. For instance, club-foot may appear in

¹*Struthers*, Edinb. New Philos. Journal. July 1863.

several successive generations not because the foot deformity is hereditarily transmitted, but rather the deficiency of liquor amnii of which it is the consequence.

Influence of the mother on the foetus.—Especially caution is indicated when a change, a new condition, is present only in the mother and the child; there is of course nothing hereditary if the change occurred in the mother during pregnancy. It has been asserted for instance that cicatricial changes which have taken place in pregnant women in consequence of injuries, have shown themselves in analogous positions on the bodies of the children subsequently born; similar experimental observations have also been reported.¹ Of course there can be nothing hereditary in this, as the whole process has nothing whatever to do with the germ-cells, and is at the most an intra-uterine transmission, but we are absolutely at a loss to explain it, inasmuch as the foetal body was already moulded before the injury to the mother occurred, and a communication could only have been possible through the placenta, which communication we can only think of as one of a chemical nature. If we consider that in most of the cases the change in the offspring did not by any means correspond exactly to that in the mother, and that there was only a change of some kind, if we bear in mind how often in recent times surgical operations of various kinds have been performed upon pregnant women, without the foetuses undergoing any corresponding changes, we should probably feel inclined in regard to those rare cases where the child has apparently participated in the acquisition of a new morphological peculiarity on the part of the maternal body, to attribute them to accidental coincidence rather than to established relationship.

This applies to an even greater extent in those cases in which the maternal body is not visibly altered, where the mother has received only mental impressions of a special kind or allowed herself to be influenced by the products of her imagination.

The "maternal impressions" of pregnant women.—To the first group belong the so-called "maternal

¹Exner, Sitzungsber. d. K. K. Ges. d. Ärzte in Wien. Sitzg. vom 18 Febr 1887.

impressions" of pregnant women: Mental impressions, as a rule of a disagreeable and repugnant nature received by pregnant women, are supposed to be the cause of changes in the external physical form of the children subsequently born, of changes similar to the agencies which produced the unpleasant impressions in the mothers; similar, but by no means alike, and even the similarity was in not a few of the reported cases only very remote. We may repeat here what has already been said on the correlation between mother and child and on the possibility of influence of the former upon the latter; it is only through chemical substances that such an influence is at all conceivable, but as to "how" this influence acts, this is in my opinion quite beyond understanding, particularly because it is not a question of arrested development of physical parts, but, as a rule at least, of atrophy or reaction in the differentiation.

By far the greatest number of cases of "maternal impressions" relate to women who have reached the second half of the stage of pregnancy or at least a period when the body of the fœtus has already received its form. Incomplete formation of extremities could therefore at the most be caused by a disappearance of parts already existing; for hare-lip to be produced it would be necessary that the definite formation of the lips already completed should be destroyed and replaced by a condition of an earlier period of development,—in a word it only needs weighing all the circumstances of the case to come at once to the conclusion that a direct correlation is here impossible. The few cases in which the correlation seems to exist are noticed and recorded, others more numerous, in which the children do not exhibit anything of a striking nature, are ignored altogether.

Different to these influences upon children in the course of their development, are the influences on the germ-cells before copulation, which may proceed not only on the part of the mother, but also on that of the father. As it is changes in the germ-cells which come here into question, it is possible for the new individual emanating from them to develop a new quality which is hereditary, seeing that it is based upon alterations in the germ-plasma. But how do alterations take place in the germ-cells, in the germ-plasma?

How do alterations in the germ-plasma occur?—These also have been attributed to mental impressions. *Von Esmarch*¹ narrates the case of a woman who was one day very much impressed by a preserved fœtus and particularly by its small lower jaw; the same evening fruitful copulation took place, and, strange to say, the child resulting from the same had in addition to other abnormalities a misshapen lower jaw. If the ripe ovum became on that evening impregnated, it must already have left the graffian follicle, and consequently have ceased to be a part of the maternal organism, even if copulation took place some little time afterwards. Further influence upon it on the part of the maternal body could therefore be exercised only through chemical action; but how is it possible for a mental impression to produce such a chemical action on an ovum lying freely, say, in one of the Fallopian tubes that the individual subsequently emanating from that ovum should exhibit corporeal conditions similar to those of the object which created the mental impression? How can f. i. a white woman who catches sight of a negro while she is copulating with a white man give to the child resulting from this copulation a coloured skin? There certainly are many things in this world of ours which are beyond the grasp of our school-learning; but where there is absolutely no possibility to explain a certain alleged fact, we are surely justified in demanding first that that fact should be demonstrated without the shadow of a doubt. *Post hoc ergo propter hoc* is no admissible proof, and we are therefore entitled, for the present, at any rate, to doubt the fact of correlation between mental impressions during or shortly before fruitful copulation and special changes in the body of the child.

We may say the same thing with reference to the belief that mental representations of certain real objects, that is products of the phantasy, during copulation are capable of influencing decisively the physical formation of the begotten child. The sinful thought of Edward the husband and of Charlotte the wife, in Goethe's "*Wahntverwantschaften*," both of whom imagine that they have committed adultery with their respective

¹v. *Esmarch-Kulenkampf*, Die elephantiastischen Formen. 1886.

lovers Ottilie and the captain was really nothing but fancy, if the only proof of guilt lay in the circumstance that the child resembled in its facial features not its parents but their lovers.

More within our comprehension is another possibility, namely that changes have taken place in the germ-cells during the interval between their discharge and their copulation, through the action of chemical agencies. It has been asserted, and specially by *Krafft-Ebing*,¹ that otherwise sane and sober parents may produce mentally deficient, idiotic or epileptico-idiotic children if they have sexual intercourse when in a state of drunkenness. Inherited insanity does not therefore come here into question,—for the parents are not insane,—but a newly arisen mental disorder supposed to be due to an acute alcoholic intoxication. There certainly is nothing against the supposition that the alcohol which is scattered all over the body may penetrate also into the germ-cells, even if they have been already discharged into the sexual ducts, and produce in them molecular changes which affect particularly those parts from which the cerebrum of an eventual fœtus evolves. It is not inconceivable that this disturbance in the germ-cells may, like other phenomena of an acute intoxication, be of a temporary character and that permanent injury is caused to the descendant only if copulation takes place before the effect of the alcohol has disappeared, whereas if it occurs when this effect has passed away the fœtus suffers no consequences. It is thus perhaps that we can explain the circumstance pointed out by *Krafft-Ebing* that the evil results of sexual intercourse during intoxication may occur, but that they do not necessarily occur in every case. It would still however remain unexplained how it is that the disturbances in the embryonic structure are not equally of a temporary nature, and why they become permanent. Some may even doubt whether the parents were really otherwise perfectly sane and be inclined to think that the difference in the results ought not to be attributed so much to the extent of their alcoholic intoxication as to the degree of their sanity which was not perhaps without its blemishes. In any case it is not possible to speak of inherited

¹*Krafft-Ebing*, Grundzüge der Kriminalpsychologie. 1872.

alcoholism, as it is only degenerative changes which come into consideration and which, even if they are hereditary, are only remote consequences of the effect of alcohol, but not alcoholism as such.

Impregnation.—Another remarkable occurrence which must of necessity depend upon changes in the maternal germ-cells, if it is altogether more than mere chance, is designated by the name of impregnation. It is especially breeders of thoroughbred dogs and horses who think that they have observed that male animals exert an influence not only upon their own offspring but also upon the offspring resulting from subsequent copulation with any other male, to such an extent that if a thoroughbred female is once covered by a mongrel male subsequent copulation with thoroughbred males is not productive of thoroughbred offspring, because of the influence still exercised by the first male. To my knowledge, similar observations of a definite character have not been made with respect to man, and I have not heard for instance that it has ever happened that the children of a woman married for the second time have borne any resemblance to her first husband; nevertheless, the following very extraordinary case has been reported.¹ A man affected with hypospadias which had already shown itself in three generations married a woman of a healthy family and not related to him, who bore him three children all of whom exhibited the malformation and transmitted it in part eventually to their descendants. The same woman though not hereditarily affected married subsequently another man who was also healthy and not hereditarily affected and bore him four children every one of whom exhibited the malformation of her first husband. The offspring of two of these children were normal but some of that of the other two presented the hypospadiac abnormality. Now, how can we explain such an heredity, if we may call it so, in the descendants of another man? There is no need to say that neither imagination on the part of the mother nor manifold fecundation will here serve as an explanation; the only conceivable possibility is that spermatozoa from the first husband which never reached any ova dissolved them-

¹Lingard, *Lancet*. 1894, I, 703.

selves in the woman's body and became so to speak part and parcel of it, thus producing alterations which affected also the germ-cells present in the ovaries and bestowing upon them the bodily peculiarities of the husband. We can conceive this process either as a direct causation brought about by the local relations between the blighted spermatozoa and the ova enclosed in the ovaries, or we may suppose that the maternal body undergoes a change to begin with, and that this change is afterwards in some way transferred to the germ-cells contained in the ovaries.

Hereditary transmission of acquired peculiarities.—We are thus approaching the great and important question as to the relations existing between the body and its single parts on the one hand and also between it and the germ-cells contained in the genital glands on the other, a question which is intimately and indissolubly connected with that of the hereditary transmission of acquired peculiarities. Can an individual, as *Virchow* thought, transmit hereditarily all that he has acquired, without any exception, or are there any limits to such a transmission, an opinion represented principally by *Weissmann* and opposed to *Virchow's* teaching? This is a question which has been very much discussed during the last thirty years.

According to what has been said above, every hereditary transmission implies a participation of the germ-cells; new, acquired peculiarities can only be so transmitted if the germ-plasma has undergone a corresponding change. An alteration in the germ-plasma is therefore a necessary preliminary condition of hereditary transmission of acquired peculiarities. Continuity of the germ-plasma, uninterrupted transmission of the same from generation to generation on the one hand, variability of the germ-plasma, its capability to experience changes on the other—these are the two poles round which the theory of heredity turns. Every variation in the germ-plasma arising in consequence of the variability, which it possesses, and which is admitted by all scientists, can be transmitted hereditarily if it is not counteracted by other agencies. It is obvious that newly arisen variations are more subject to such counteractions, than those which have existed for some time and become more firmly

established. It also seems that those variations which are rather insignificant persist and are transmitted more easily than marked departures from the normal type. But whether the change is great or small, whether it persists or whether it disappears soon, every variation in the germ-cells is something new, something that did not exist previously in the germ-plasma of the ascendant, the bearer of the inheritance, therefore something foreign to the latter, something contrary to it, something acquired. Inheritance and acquisition, something inherited and something acquired, these are natural antitheses, and what does not belong to the one must be attributed to the other. Every variation in the germ-plasma is therefore something acquired, something which is in my opinion not dependent on the variability originally inherent in the germ-plasma, a variability which is constantly producing changes without external stimulation, a sort of effect without its proper cause—but something as to which such external causes form the determining factor. The whole doctrine of a phylogenetic progressive development is based upon the hereditary transmission of acquired qualities on the part of the germ-plasma, and though pathological development is not a progression towards a higher type, but signifies rather a degeneration, its main process cannot possibly be any different from that of natural development. It is certainly strange that in germ-variations also a certain regularity is noticeable, that certain typical malformations are constantly recurring in the same manner (polydactylism, syndactylism, imperfect union in the extremities, in the face or in the penis, nævi, hæmophilia, colour blindness, myopia, etc.) ; but this may perhaps thus be explained, viz., that not all the parts of the germ-plasma are equally susceptible, equally variable, and that certain external causes constantly affect in the same way certain divisions of the germ-plasma (so-called determinants of *Weissmann*). According to *Wiedersheim*¹ it is mostly such parts of the body and such organs as are engaged in a continuous phylogenetic retrogression or transformation that are affected by the variations.

¹*Wiedersheim*, *Der Bau d. Menschen*, u. s. w. 1887.

Primary and secondary germ-variation.—It is obvious that in order to comprehend fully the nature of these processes, it is necessary that we should be acquainted with the manner in which the external agencies that produce variations by influencing the germ-plasma act; whether they have an immediate effect upon the latter, that is whether they produce a direct variation in it (primary germ-variation), which in its turn influences the germ-plasma, or whether they cause in the first instance a change, a variation, in the metazoic bearer of the germ-plasma, the soma (primary soma-variation), which in its turn influences the germ-plasma, thus giving rise to a secondary germ-variation. Between them stands the case where the external agencies produce simultaneously a variation in the soma, and an adequate one in the germ-plasma, a case which can be separated from the latter alternative only with some difficulty. Both in the second and middle cases it is possible where correspondingly altered descendants emanate from the germ-plasma, to speak without any hesitation of hereditary transmission of acquired peculiarities, because the descendants exhibit the same variation as their immediate ascendants. In the first case, however, the circumstances are different. There the soma of the bearer or of the generator of the germ-plasma shows no alteration, and such alteration only appears in the body of the descendant emanating from the germ-plasma primarily altered. In a former work ¹ on the origin and hereditary transmission of individual characteristics I have proposed that this kind of transmission should in consideration of the soma be designated as hereditary transmission of indirectly acquired peculiarities in contradistinction to the other kind, the hereditary transmission of directly acquired peculiarities. In the first case the transmission has not, like in the second, been effected by the soma directly, and it can only attain a somatic appearance if the altered germ-cell impregnates, or is impregnated by, another and proceeds towards further metazoic development.

Primary germ-variation through amphimixis.
—In the production of primary pathologic germ-variations

¹*Orth, Ueber die Entstehung und Vererbung individueller Eigenschaften. Festschrift für A. v. Kölliker, 1887.*

amphimixis plays a very considerable part. To begin with the combination of the two germ-plasmas is alone capable of giving rise to new conditions, as is amply proved by the cross-breeds of both human and animal races. How different the cross-products may turn out both physically and mentally may be seen on the one hand in the offspring resulting from the union of individuals belonging to different European nations with individuals belonging to the same coloured race (English mulattoes in Jamaica and French mulattoes in Guadeloupe are totally different from one another both mentally and physically), and on the other in the different cross-results arising from the different arrangements in the sexes of the same races: a white man with a coloured woman produces quite a different offspring than a white woman with a coloured man. Experiments on animals also show that the wider apart the germ-cells are from one another with regard to their origin the more unsuitable they are for the purpose of procreating a healthy and vital cross-breed, which is in its turn capable of reproduction. These cross-products are in consequence of their double racial origin pathologically inclined formations, but such occur also among the offspring of unmixed unions, as the result of the copulation of unsuitable germ-cells, as suggested especially by Ziegler.

Marriage among blood-relations, and potential heredity.—It is obvious that near relationship of the germ-cells does not as a matter of course render them unsuitable for copulation. In and in breeding, or marriage among blood-relations, is therefore as such not of very great importance as a cause of the occurrence of pathologic characteristics, and there are numerous cases both in animals and human beings where copulation by very near relations has resulted in the procreation of absolutely healthy, well-formed and thoroughly reproductive descendants. If among the offspring of incestuous intercourse insanity is occasionally observed, this is not due so much to the near relationship of the generative cells as to the probability that the incestuous parents were mentally deficient and that the incestuous act was a proof of this deficiency. In such cases it is not difficult to suppose that the insanity as such was hereditarily transmitted.

There is no doubt that the danger of marriage among blood-relations consists principally in the circumstance that it occasions an accumulation of unfavourable hereditary predispositions in one individual (potential heredity).

Primary germ-variation in the free germ-cells.

—Interrupted copulation has also been considered as a cause of the production of new pathologic conditions. Thus it has been asserted that malformations may ensue in consequence of the entrance of more than one spermatozoon into the ovum; thus the possibility has recently been suggested that certain tumours (teratomata, embryomata) may result from the impregnation of a polar globule, in which case the incomplete embryo arising from this secondary impregnation is surrounded by the properly fecundated ovum. The circumstance that the male as well as the female germ-cells may, after leaving their places of origin, remain for some time in the genital ducts of their bearer or even (the spermatozoa after coitus) in the genital ducts of the other individual, and that they must travel a certain distance before reaching copulation (see page 47), makes it possible for variations to arise in them during this interval without any direct interference on the part of the parental body. New peculiarities may thus be acquired which only become manifest in a corresponding alteration of the soma if they, the germ-cells, undergo further development. The brothers *Hertwig*¹ have shown that the eggs of sea-urchins which in the fresh state are able to repel certain foreign spermatozoa lose this resisting power after a lengthy sojourn in sea-water and are easily impregnated by these same spermatozoa. This proves that material changes may take place in the germ-cells after their departure from their places of origin, and it is possible that in man, too, such changes may occur and that they represent variations in the germ-plasma which may lead to an alteration in the soma eventually arising from it. As I have already explained, I do not think it likely that such germ-variations may be produced by mental impressions or by simple imaginary representations, but I have also

¹*Hertwig*, O. and R. Exper. Unters. ü. d. Bedingungen der Bastard-Befruchtung. Jena 1885.

pointed out that it is not inconceivable that they may be caused through chemical action. If the above-mentioned statements of *Krafft-Ebing* on the possible results of intercourse during an attack of drunkenness are correct, the insanity exhibited by the descendants must be capable of hereditary transmission, seeing that it springs from the germ-cells and that it is based upon an alteration in the germ-plasma. If it is merely a change of a degenerative character in consequence of altered nutrition after the discharge from the germ glands and of other external conditions, disorders may arise that are perhaps the starting point of many a miscarriage for which a plausible explanation is missing; where these disorders do not go beyond a slight extent they produce predispositions to disease in the descendant born alive, which as they are due to an alteration in the germ-plasma are also capable of being hereditarily transmitted. But these are all purely hypothetic theories, and I am not in a position to adduce any proofs of the existence of such primary germ-variations and of indirectly acquired somatic peculiarities connected with such variations.

Primary germ-variations in the germ-glands.—

It has already been pointed out that primary germ-variations may arise also in germ-cells which are as yet contained in the germ-glands. I include here the disturbance in the developmental faculty—up to complete sterility—of the generative cells of wild animals when they are kept in captivity, that is under external conditions totally different, to those they were previously accustomed to. I consider that the similar conditions occurring in the human female as so-called climatic disturbances (diminution of fecundity up to complete sterility mostly in the third generation) also belong to this class, though the abnormal external conditions apply not only to the ova but also to the whole rest of the body, and there is a possibility that what takes place is not a primary germ-variation, but a secondary one which has been caused by a previous alteration in the soma.

Similar doubts arise when considering the question of chronic alcoholism in relation to mental disorders. Some psychiatrists attach considerable importance to chronic alcoholism as a cause of insanity not only in the drinker himself

but also in his descendants, and we may well ask whether the latter have inherited an acquired abnormality. Has the drunkard really become insane as a consequence of alcoholism? Or was the alcoholism a consequence of deranged mental activity? In the latter case it would not be very difficult to regard the insanity of the descendants as a result of heredity. But if the premiss is wrong—and there are drunkards who are driven to alcoholic excess not by an inner impulse, but by external circumstances and sometimes even against their will—the query arises whether it is only an indirectly acquired condition which appears in the descendants, as a result of a primary germ-variation produced by the alcohol, such as occurs, according to *Krafft-Ebing* after intercourse in a state of intoxication, or whether a directly acquired peculiarity has been hereditarily transmitted in consequence of a secondary germ-variation in the germ glands brought about by the alcoholically diseased brain, from which germ-variation the insanity of the descendants ensued as a necessary result, resting therefore on a hereditary basis.

Secondary germ-variation.—We have thus come back to the important question which dominates what we generally speak of as the hereditary transmission of acquired conditions, that is the hereditary transmission of new conditions which the soma has acquired, namely to the question what are the relations between the body as a whole and its constituent parts on the one hand, and the germ-plasma contained in the germ-glands on the other. If a decisive influence can be or is exercised on the part of the single constituents of the soma on the germ-cells enclosed in the germ-glands which are the bearers of heredity, if there is such a correlation between them that acquired changes in the soma are capable of producing adequate variations in the germ-plasma contained in the germ-cells, then it is possible for acquired somatic conditions to be hereditarily transmitted, otherwise there is no such possibility.

Relations between the body and the germ-cells.—It is obvious that the germ-cells are dependent upon the body for their nutrition. The uninterrupted transference of the germ-plasma to an unlimited number of descendants, the

phylogenetic eternity of the germ-plasma is necessarily supposed to be based upon its multiplication in every single individual, which multiplication in its turn can only go on by means of a continuous nutrition. The question arises whether the body though it is itself dependent upon an extraneous food supply is capable of exercising an alterative influence on the germ-cells by providing them with a special kind of nutrient material. I should imagine that there are sufficient reasons for assuming that it is possible by a permanent qualitative change of food to bring about an alteration in the somatic quality though there must be other factors concerned as well and it is quite conceivable that by a corresponding change in the germ-plasma a sort of accommodation to the altered nutrition takes place, thereby creating an hereditary somatic variation. Of course we must not forget in this connection that a similar mode of nutrition on the part of the descendants themselves may have precisely the same results.

Is it also due, I wonder, to conditions of nutrition that the children of older individuals whose fecundity is about to expire so frequently present a feeble constitution, and that they so often perish from want of vitality? Who can say that what we see in these cases is only a result of a regularly recurring evolution of the germ-plasma or that there do not exist also other relations?

Undoubtedly there are such relations between the germ-cells and the rest of the body. They are in the first instance of a nervous, in the second of a chemical nature. Both emanate, to begin with, from the germ-glands; these produce by reflex action nervous processes which are capable by internal secretion of influencing chemically most distant parts of the body. But does the body as a whole, do single constituents and organs of it also exercise a nervous influence upon the germ-cells? Can the germ-plasma present in the germ-cells be definitely influenced by chemical substances which spring directly from the various parts of the body, or are formed secondarily through nervous processes? Who can declare this to be impossible? And who can prove it? The third possible explanation, namely that in addition to nervous and chemical agencies there are

minute physical elements (whether we call them as *Darwin* did "gemmules" or by any other name) which are constantly carried by the blood from the smallest parts of the body to the germ-cells and are capable of causing such variations in the germ-plasma as will afterwards invest the soma springing from it with peculiar characteristics, this explanation is absolutely groundless and probably at the present time accepted by hardly anybody.

There are consequently many things imaginable with regard to the decisive relations between single parts of the body and the germ-plasma enclosed in the germ-glands; a certain scientific interpretation by what means variations in the germ-plasma may produce in this or that part of the descendants' soma similar alterations, so that they may be regarded as inherited, is not impossible; the possibility of an hereditary transmission of certain acquired peculiarities of the soma cannot therefore in principle be altogether excluded, but then this is in my opinion all that can be said. For the rest, the theory leaves us entirely in the dark and it cannot tell us anything conclusive. Thus there remains in answer to the question whether there exists an hereditary transmission of acquired conditions nothing but experience, and we must for the present devote our energy towards the elucidation of the facts which tend to show that such a transmission does exist and particularly of those facts which do not admit of any other explanation.

Hereditary transmission of mutilations.—

It may be presumed, to begin with, that the relative importance of the various parts of the body to the germ-plasma, —once we admit the hypothesis that the possible relations above described exist in reality,—that the degree of connection between parts of the body and the germ-cells, must vary according to the altruistic significance of the parts of the body. It is therefore necessary in discussing the question of hereditary transmission of acquired conditions to consider special possibilities. The question whether mutilations of non-vital parts, especially of the extremities or of the surface of the body in general, are hereditary or not, has recently been answered by almost all authors in the negative; and rightly so, considering that no

conclusive proofs have been furnished to demonstrate the existence of such an heredity, whereas on the other hand numerous weighty observations have been made in human beings which speak against it.

There is a natural mutilation which has for thousands of years recurred again and again, and which will continue to recur, because it has not become superfluous through hereditary transmission—that is the rupture of the hymen. There is even no reason for assuming that this little membrane is of any use—on the contrary, it were better if it did not exist—yet it is constantly forthcoming and it must constantly be ruptured at the first sexual intercourse. If we want an example of a mutilation which is not required by nature, we have one in the circumcision of numerous generations of various nations in whom the prepuce is nevertheless as a rule present again and again, though they are the descendants of circumcised ancestors. We have other examples in the crippled feet of Chinese women, in the artificial deformities of the skull, which have to be produced anew in every fresh generation. These examples are the more important as they refer to young individuals, and because it is said that the tendency to transmit hereditarily acquired conditions is especially great in young people and that it gradually diminishes as age advances.

Does this apply also to the mutilation of internal vital organs? Only very little is known on this point. *Massoin*¹ has reported a case of artificially produced atrophy of the spleen which was hereditarily transmitted, but it is principally the experiments of *Brown-Séquard* and of his successors on the hereditary transmission of artificially produced epilepsy which are frequently quoted as evidence. By certain operative injuries to the nervous system (injury to the sciatic nerve, or uni-lateral section of the spinal cord) *Brown-Séquard* has succeeded in making rabbits epileptic and in observing the same conditions in their non-operated offspring: in connection with these experiments it was noticed that the operated females were more suitable for hereditary transmission than the males. *Westphal*

¹Bulletin de l'acad. roy. de méd. de Belgique. XIV. 772. 1880.

has obtained similar results by injuries to the brain, and even by blows on the head; other experimenters, however, have not been so successful as they either did not notice any alterations at all in the offspring¹ or they did not see epilepsy exclusively. Thus *Obersteiner* saw among 32 young rabbits descended from artificially epileptic parents only 2 epileptics and, in 17, weakness, paresis, neuro-paralytic eye-affections, in short, all sorts of nervous disorders, therefore a well-marked polymorphous heredity, that is a heredity transmission not of a disease, but of a nervous degeneration, of a predisposition. The last word has not yet been spoken on this subject, but I think it must be recognised that these experiments have at least demonstrated the possibility of a hereditary transmission of acquired injuries of the nervous system. It is only possible to explain this by supposing that the brain has permanently influenced the germ-cells. As to why females should have appeared to be more competent for the transmission than the males, this might possibly be accounted for by the circumstance that the development of the male germ-cells proceeds at a quicker and more active rate than that of the female germ-cells and that the male germ-plasma multiplies therefore more quickly and more numerous than the female. The latter may consequently perhaps be subject to greater influence, seeing that the influencing agencies are equally great in both sexes and that there are not as many female as male carriers of germ-plasma to divide the effect of those agencies.

The hereditary transmission of functional acquisitions.—If the possibility of a hereditary transmission of traumatically acquired new qualities cannot be excluded, there is even more reason to admit theoretically that such a transmission exists with respect to changes in different parts brought about by use or non-use. It is perhaps necessary to distinguish here also between important and unimportant parts, between extremities, outer coverings and internal organs, although it has been maintained, for instance, that the knee-callosities present in camels employed as beasts of burden are hereditary while they are entirely absent in the animals living

¹*Sommer, Ziegler's Beitr.* 27 Bd. 1900.

in a wild state. The productiveness of the udder in cows has been considerably increased by artificial training; on the other hand there are gynæcologists who incline to the opinion that the breasts in women have undergone considerable hereditary degeneration on account of the growing practice not to demand any service from them.

Breeders of animals believe also that intellectual faculties acquired by practice are hereditarily transmissible. As regards man experience has shown that most highly gifted and talented individuals may spring from circles with very limited mental activity, and vice-versa, that very often the nearest descendants of most clever men whose minds were constantly employed hardly reach mediocrity. But these are perhaps exceptions, and we may take it that as a rule non-use of a faculty leads to its hereditary diminution and use to its hereditary increase.

Hereditary transmission of chemical changes.

—Above all we are justified in thinking of a hereditary transmission of acquired conditions when chemical changes come into consideration, due perhaps to the absence of, or an alteration in, a so-called internal secretion. It was hoped that the knowledge recently gained with regard to immunisation would also lead to an advancement of the doctrine of heredity and some observers have already spoken of a hereditary transmission of an artificially produced immunity. There can be no doubt about this, since experiments as well as observations in man have proved beyond doubt that there exists a congenital intra-uterine immunity, but we know that this is not evidence of the hereditary transmission of acquired conditions, and that it might be nothing more than a purely placental transference of the immunising substances. Proofs of a hereditary transmission of the immunity could only be forthcoming if it were possible to show that an acquired immunity can be transmitted to the offspring through the semen. Unfortunately this does not appear to be the case, certainly not as regards abrin and ricin immunity so that congenital immunity where it does occur does not rest upon heredity but, if one may say so, upon a placental intoxication.

But even if it were possible to prove that a transmission

of an acquired immunity does take place occasionally from parents to offspring through the germ-cells; if it should turn out to be correct that a natural immunity, as f. i. that of ancient civilised nations towards some infectious diseases, is due to an acquired immunity being transmitted hereditarily, it would still be necessary, in order to look upon it as an example of hereditary transmission of directly acquired qualities, to demonstrate that it is not a primary variation of the germ-plasma, but a secondary and subordinate one equal in its effect to the variation in the soma. In the latter case it would only be an indirect germinative acquisition which must be judged quite differently.

The same doubt arises in all those cases in which a physical anomaly suddenly appears in a family or in which predispositions to disease of any kind show themselves. Be it hexadactylism, or hypospadias, or hæmophilia, or gout, diabetes or anything else, proof will hardly be forthcoming that a primary variation in the germ-plasma is not accountable for the first case, and if it is so, there is nothing extraordinary in the variation being hereditary—but it is not in such a case a hereditary transmission of acquired conditions in the sense in which the term is generally taken.

SUMMARY.—In summing up the theoretical foundations of heredity they may be recapitulated in brief as follows: Qualities which are derived from the continuity of the germ-plasma are inherited and hereditarily transmissible qualities; what has arisen through primary variation of the germ-plasma and appeared for the first time in the offspring is acquired indirectly and can also be hereditarily transmitted; that which produces a secondary but adequate variation in the germ-plasma after having appeared first in the soma of the same generation is acquired and hereditarily transmissible, but acquired conditions of the soma which do not produce an adequate variation in the germ-plasma cannot possibly be so transmitted. This seems to apply to all mutilations of external and superficial parts.

Potency of heredity.—If we compare to one another the different cases which exhibit a hereditary transmission of particular qualities, a series of special phenomena appear both

in normal and abnormal heredity, which, though it may not be justifiable or advisable to designate as laws, manifest very often a certain regularity and are therefore worthy of a brief consideration.

Although theoretically speaking the hereditary tendency of the male and female germ-cells is exactly the same, it is well known that heredity as a whole as well as with regard to single parts of the body is very variable not only in respect of the two sexes but also in respect of different parts of the body in the same sex. As regards both normal and pathologic physical peculiarities, it is sometimes the paternal influence which predominates and sometimes the maternal, so that the children are constitutionally sometimes more like the father, and at other times more like the mother. In some cases the paternal heredity seems to predominate at one period of the child's life and the maternal at another, and frequently such a mingling of the two takes place that a similarity f. i. in the facial features in either direction is altogether absent, and something totally new and different makes its appearance. That certain parts of the body may reveal a striking hereditary character is evidenced by the noses of the Bourbons and the lips of the Hapsburgs whose male scions have transmitted their facial peculiarities to their descendants though married to women of most varied descent. Pathological conditions equally show very different tenacity; some can be made to disappear only very slowly, others, f. i. certain mental degenerative symptoms, can be counteracted more quickly and successfully by the introduction of non-predisposed germ-cells.

Crossed heredity.—The descendants of opposite sex may resemble each other completely or they may be totally unlike changing according to sex or even in the same sex; sometimes there is a crossed heredity, that is, the sons resemble more the mother and the daughters more the father. There is no fixed law whatever in the matter although there may be certain general differences as regards the quality of the heredity on the part of the male and female ancestors respectively as suggested especially by *Orschansky*.¹ This observer says that

¹*Orschansky*, l. p. c., page 345.

each of the two procreators plays in heredity a special definite part; the variability or individuality is influenced by the paternal element, whereas the maternal tends to maintain the average type. The mother transmits a minimum of pathologic heredity, she offers energetic resistance to the disease-producing influence of the father and finally transforms a severe hereditary predisposition into one of a less threatening type.

Homosexual heredity.—That the sex as such is not without significance in the hereditary transmission of predispositions to disease, that the general sexual tendency has some definite and influencing bearing on the pathologic proclivity, in other words, that heredity does not depend only on the parents but also on the offspring themselves, and especially on their sex, this is clearly seen in the homosexual character which is distinctly apparent in some pathological hereditary conditions. Thus there have been hæmophilic families in which only the male members but none of the female showed the hereditary affection. Nevertheless the important observation has been made, in hæmophilia and in other anomalies as well, that although the women did not present any traces of the inherited peculiarity in themselves, they were yet capable of transmitting the same to their male descendants.

Latent heredity.—That is a case of so-called latent heredity which proves, particularly as regards hæmophilia, that it is not the disease which is inherited, but a predisposition to it, from which the disease itself need not necessarily result. For it is evident that the women must have possessed the predisposition in question considering that they were able to transmit it and that certain special circumstances obviously connected with the female sex, prevented it from developing into disease.

Collateral heredity.—Latent heredity plays a part also in the so-called collateral heredity, in which normal or pathological conditions were present not in the direct ascendants but in collateral ones, that is, uncles, aunts, etc. Of course these collateral ascendants could not possibly transmit anything, and for this reason the term collateral heredity does not seem very appropriate. The explanation is probably that a common ancestor was the transmitter of the peculiarity in question, and

that among the offspring affected with the latter one or two did not exhibit it manifestly; that the parent male or female of a particular descendant was one of those who inherited the peculiarity latently, and that he or she was able to transmit it to his or her offspring directly, or even through one or two generations also latently in whom it reappeared in full strength. But even in latent heredity it is not absolutely necessary that there should be a hereditary transmission of a particular peculiarity, as the case might be nothing but the result of external circumstances. Thus *Delage*¹ has expressed the opinion that there is no latent heredity as regards special parts of the body, but that the ovum has a definite physico-chemical composition which permits it under favourable circumstances to develop within certain physiological limits; it would then depend entirely on external circumstances, whether that development inclines to the one limit or the other; with regard to the nose, f. i., it might be the same limit in the grandfather and the grandson and the other limit in the case of the father. It would therefore not be correct to speak of a latent hereditary transmission of the grandfather's nose to the grandson, as the same external circumstances may have produced the same result. Such an explanation however is not admissible in the case of pathologic conditions which have been latently inherited just because they are not phenomena coming within physiological limits but are altogether outside the range of physiological normality.

Reaction, Atavism.—In these cases of latent hereditary transmission there is a so-called return to ancestral conditions; if the ancestors in question were a few generations removed we speak of atavism. But as it is not only a return to more or less remote ancestral conditions which is assumed but also, especially as an explanation of animal-like formations (theromorphism), to species which are very far removed in the phylogenetic genealogical tree, it is necessary to distinguish clearly between family atavism and phylogenetic atavism. It is the latter which has been advanced as an explanation of all kinds of pathologic conditions (polydactylism, polymastia, microcephalism, etc.) of which it has been said that they have arisen through latent

¹l. p. c.

heredity. As to some of the conditions pertaining to this class however, their purely pathological character has been demonstrated; with regard to others it is sufficient to say that they are due to an arrested development, since even animal-like formations (theromorphism) may easily be caused by it, and since ontogeny is to a certain extent a recapitulation of phylogeny. It might therefore be permissible to speak of an ontogenetic atavism. Nevertheless some biologists have even in recent days spoken approvingly of phylogenetic atavism and phylogenetic latent heredity. Special stress has been laid on the atavistic character of certain so-called degenerative phenomena in hereditary insanity in which a secondary origin has been thought of as a consequence of the cessation of the altruistic activity. The primary disorder need not therefore be also an atavistic one; *Lombroso's* idea of the "homo delinquens" as a sign of return to our wild ancestors has found no supporters.

Corresponding heredity.—It has already been mentioned that inherited predispositions may not mature fully before the period of extra-uterine development, so that they are not complete at birth and only show themselves at a later period of life. This condition has been called corresponding heredity, if the predisposition appears in several generations at the same time of life.

Homoeo-hetero-polymorphous heredity.—Heredity may be homomorphous or heteromorphous; in the former kind an equal condition appears in the offspring (hexadactylism, hypospadias, tendency to hæmophilia, gout, etc.) or something else, perhaps something in many ways different. In such case we speak of a polymorphous heredity, an example of which we often see plainly in mental diseases of a hereditary nature. Nevertheless the conditions are all of the same class, though quite different disturbances affecting different parts of the body have been associated and a far-reaching transformism has been assumed. Thus *Orschansky*¹ quotes as an example of transformation of inherited forms of disease the observation that the children of fathers suffering from diseases of the chest are frequently subject to nervous or mental diseases. He says:

¹ p. c., p. 270.

"For this reason, the transformation of that form of disease from which the parents suffered appears in a new pathological variation as a main peculiarity, almost as a law for the whole range of pathological heredity. Functional diseases of the mother are frequently transformed into a more constant and more severe organic disease in the son, and an organic disease of the father is no less often transformed into less serious functional disorders in the daughter." It is always a risky thing to lay down laws with regard to normal or pathological heredity, and many a law thus laid down has been afterwards demolished by the facts, but the transformistic theory is not without its supporting realities. Heredity need not confine itself to special parts of the body. It may cause a deficiency in the constitution as a whole. It is possible for a general dystrophy or degeneration to be present and to be inherited. What will emerge from that general unfavourable predisposition, where disease will make its appearance, of what form that disease will be, all this depends, like in the polymorphous heredity of insanity, entirely upon external circumstances. For here also not a disease has been inherited, but only a general inclination to disease.

The literature on the points discussed in this article is enormous and it is impossible to give complete references here. I mention therefore only a few recent works in which the literature on the subject will also be found.

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IV

Consanguinity in Marriage and its Effects on the Offspring

IV.

CONSANGUINITY IN MARRIAGE AND ITS EFFECTS ON THE OFFSPRING.

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Introduction.—The question as to the injuriousness of marriage between blood-relations has already produced a very extensive literature. By far the greater number of authors incline to the opinion that such marriages are harmful and seek to prove its correctness by the frequent occurrence of predispositions to disease and of disease proper among the descendants of blood-relations. Others again attempt to establish as probable exactly the opposite of this, or they make so many reservations that the absence of outside blood as the exclusive cause of organic degeneration in the offspring is divested of all special significance. Nothing would be easier than to quote here a large number of contrasting views, and the most careful observers agree in declaring the question as by no means finally solved.

The great divergence in our present scientific views of the injuriousness of consanguinity in marriage depends probably on various causes. In the first instance the question is a difficult and complicated one. It has never been impartially examined into whether marriage between blood-relations does not present also at least certain one-sided advantages to the offspring, relating for example to mental development, such as we have reason to expect in accordance with the laws of heredity. Generally speaking neither question nor proofs have been advanced with sufficient regard to the facts and laws of heredity though not even in this way do we always arrive at the same result.

Influence of heredity.—Consanguinity is first of all capable of producing an easily imaginable augmentation in the effect of heredity. (Summation of the predispositions by potential, combined heredity.) And it is further conceivable at least, that it may form per se, even without any manifest hereditary predisposition and in the case of apparently perfect procreators the cause of certain diseases. But in such a case, even if we do not exactly adhere to *Weissmann's* strict theory of heredity and agree with the less rigorous view of *Orth*, new qualities, of whichever kind they may be, can only be inherited through a series of generations if influences are really exercised through the consanguinity upon the germ-plasma directly or in conjunction with the whole soma, thus producing degenerate germ-variations which are hereditarily transmitted through subsequent generations. There are however at the most only very few such external influences upon the germ-plasma known to pathology (suitable examples might be found perhaps in the predispositions to disease, and in the injury to the germ-cells caused by alcohol). But where no degeneration of the germ takes place there is no hereditary transmission to subsequent generations, and nothing of consequence occurs. By observing strictly the laws of heredity one is never certain when examining statistically into one and the same peculiarity (good or bad) of a number of people descending from a consanguineous marriage that predisposition through heredity in the narrower sense can be excluded entirely. Because from the laws of heredity the possibility arises that two similar predispositions which are not on account of their slight intensity noticeable in the parents individually, combine and obtain through this combination such a force in the offspring that a definite characteristic is imparted to the latter. The qualities arising by means of such combination-processes in the germs are not inherited as such, as they never existed in this form in the ancestors; but as they consist of distinguishing features of the parental germ-cells they must have been transmitted from the ancestors to their descendants; in such a case the appearance of new qualities in the children is only an apparent one. It is even conceivable that a certain peculiarity has not come to light in the consan-

guineous parents because it was suppressed by other predominant characteristics; the latter being less prominent in the children the parental peculiarity not observable in the parents becomes strikingly so in the offspring. The question may therefore be simplified and the probability of obtaining decisive results from investigation will accordingly be the greater, if we begin by taking into consideration only the augmentation of the effects of heredity through consanguinity, and disregarding, on account of its being outside the domain of ordinary heredity, the organic degeneration in the descendants supposed to result exclusively from the absence of foreign blood.

Moreover the examination into the consequences of consanguineous marriages has hitherto been frequently conducted for certain purposes, or only partially, from limited and one-sided standpoints, on the basis of restricted statistics or historical observations of the civilisation of self-contained nations and castes and of the experiences of agriculturists and breeders. It is therefore not surprising that as soon as the results thus obtained were generalised and made to apply to all conditions without exception, mistakes often arose. But the question as to the nature and consequences of consanguinity can only be solved in a manner embracing all the points of view hitherto considered separately, and that not exclusively with regard to one particular species of organism, say, man alone. This must be done by comparative investigations comprising the whole organic world. A well-directed combination of all the standpoints from which the problem has hitherto been studied is accomplishable, and the widest possible survey obtainable by considering the marriage of blood-relations as a special case of in-and-in-breeding.

In-and-in-breeding (Endogamy).—In opposition to the natural selection as it proceeds in nature by means of the struggle for existence we call in-and-in-breeding (or endogamy) —the further propagation among themselves of the cross-products of various races. In this way it is possible with certainty to perpetuate in the course of a few generations qualities produced in the cross-breed. The general admixture in one and the same race may, according to *Reibmayr*, be called "far

in-and-in-breeding"; that inside of a small circle of individuals of the same race "near in-and-in-breeding." In-and-in-breeding produces refinement; but morbid characteristics common to both parents are naturally also capable by (near) in-and-in-breeding of aggravation and accumulation. The selection from all the qualities by the in-and-in-breeding depends therefore probably also only on an augmentation of the effect of heredity. Consanguineous breeding is entirely subject to in-and-in-breeding, for it is evident that the fixation of certain characteristics is effected much more quickly by the pairing of demonstrable blood-relations. The stigma of incest which is accountable for a great deal of the existing prejudice against consanguineous marriages therefore falls to the ground.

Blood-relationship and its degrees.—Relationship (blood-relationship) is according to the ideas prevalent among civilised nations with respect to family, the connection existing between several persons on the basis of procreation or descent and therefore on that of community of "blood." The term "blood" means in this connection the sum of all the peculiar characteristics and faculties inherent in all these persons (the breed), but especially all the in-and-in-breeding phenomena. The expression "direct line" means the relationship of those persons of whom one descends from the other. Where individuals are not related in a direct line but are descendants of the same third person we speak of "collateral relationship." Blood-relations born from the same parents are full brothers and sisters; where they have only one parent in common, they are half-brothers or half-sisters, that is, consanguineous where the common parent is the father, and uterine where the common parent is the mother. "Distant" relations begin according to the "Sachsenspiegel" (a mediæval law-book) with the children of brothers and sisters. The collateral lines are either "like" when each of the lines coming into consideration has the same number of removes (cousins f. i. are said to be related in a like line) or "unlike" (as f. i. the relationship between uncle and nephew). The nearness of relationship is determined by the number of removes present between two persons. According to Roman law there are as many removes between two relatives

as there are births between them. The German Civil Code (§ 1589) has adopted the same principle. It declares father and son as related to each other in the first degree of the direct line, grandfather and grandchild in the second degree of the direct line, brother and sister in the second degree of the collateral line, and uncle and nephew in the third degree of the collateral line. The canonical reckoning of collateral relationship takes into consideration the distance from the common ancestor; canon-law takes therefore only one line, but always the longer one, that is the procreations as far as the common founder. According to canon-law, brother and sister are related in the first degree, uncle and nephew in the second. There may also be "double relationship" both in the direct and in the lateral line. In the first case it may arise by the descent of one person from another through two lines of generation (f. i. great-grandfather and great-grandchild, where the latter springs from the union of two cousins). Double relationship is present in the lateral line where two persons are descended from a common third through more than two lines of generation or from two common ancestors (mothers).

This is the place to mention two propositions discussed by *Lorenz*. According to him, every individual has two parents but not everybody has 4 grandparents and 8 great-grandparents, and very few people indeed are able to supply any information about their 16 ancestors and 32 great-ancestors. With regard to these there are only pedigrees which prove that in the upper lines of ancestors the same persons appear several times as the ancestors of one and the same descendant. This happens to a greater extent wherever marriages occur among near relatives but also much more than is generally assumed even among the descendants of different families. The proportion of the number of ancestors theoretically to be expected to the number actually present expresses the numerical loss of ancestors. In the uppermost ancestral lines we ought to possess an extraordinarily large number of ancestors, but in reality the number of ancestors in the uppermost lines is apparently a very small one indeed (we are hardly all descendants of Adam and Eve but spring presumably from a limited number of ancestors) and the

loss in ancestors is therefore an immense one. As it is at present generally the case, the number of ancestors of any one descendant is much too small, because the number of people who really do cross is on account of such circumstances as race, nationality, religion, domiciliation, difference of social position, etc., etc., comparatively a very limited one. The greatest possible increase in the number of ancestors is caused by racial admixture. Everything depends therefore on in-and-in-breeding. An exact definition of the term "in-and-in-breeding" is really possible only on the basis of a mathematical calculation of the loss in ancestors.

The complemental value of the loss in ancestors is the sum of heredity. To the descendants of a marriage between cousins the loss in ancestors is $2/8$; the sum of heredity is therefore $6/8$. This means that the children of such a marriage have only 6 great-grandparents instead of 8, and that they consequently inherit their qualities from 6 such great-grandparents only. But the sum of heredity of each of the 8 ancestors is to be reckoned as $1/8$. According to *Peipers* this method of calculation causes difficulties only where there are deviations within the line-succession, that is, where a pair of ancestors appears in different lines. The loss in ancestors to the descendants of a marriage between uncle and niece, for instance, is reckoned to be equal to that of cousins, although this seems incongruous. *Peipers* confines himself to giving a short account of how the value of the sum of heredity is to be calculated from genealogical points of view:

Father and daughter . . .	Sum of heredity =	$1/2$
Brother and sister . . .	" " "	= $2/4$
Uncle and niece . . .	" " "	= $1/4$
Double cousins . . .	" " "	= $4/8$
Cousins . . .	" " "	= $6/8$
Second cousins . . .	" " "	= $14/16$

The designation in degrees hitherto adopted is not of much use, because, as we have seen, most variable methods of calculation have been and can be applied. In Germany there are two legal "computations," the juridic-Roman and the canonic.

Incest.—We have already defined the pairing of demonstrable blood-relations as consanguineous breeding. This consanguineous breeding becomes incestuous breeding if parents pair with their children or grandchildren, brothers with sisters, or grandchildren with one another. Where the relationship is not too close we speak of family-breeding (marriage between relatives).

Prohibition of marriage between blood-relations.—It may be said that the prohibition of consanguineous marriages is the rule not only among civilised but also among uncivilised nations. Respecting the latter two customs connected with marriage and dating from ancient barbarian times are quoted by those opposed to consanguinity, namely exogamy and wife-capture (Australia, northern races [*O. Magnus*]), the prohibition among the Indian Brahmins to marry women belonging to their own tribes, the rape of the Sabinian women, the abduction of Shilo's daughters by Benjamin's men spoken of in the Bible, the preservation of some "form of wife-capture" by various nations of all kinds of races, the prohibition to marry a person bearing the same family-name existing among the Chinese, in the highlands of Scotland and among the peoples in the Indian Archipelago, etc., severe punishment of incest. (Buginese, Pasemakers.)

It would be however very difficult to prove that exogamy f. i. was nothing else but a reform-measure intended to put an end to marriages between blood-relations when it was found that they have injurious consequences (*Morgan, Main, Schiller-Titz*). It probably originated mainly as a result of the oldest condition of society and of the family (communal marriage, polyandry, marriage with the brother's widow, scarcity of women among some tribes, etc.). The matriarchate associated with such a primitive family-system would even frustrate the intention to eliminate consanguineous marriages; for half-brothers and half-sisters on the father's side would be able to marry each other, being of different tribes. As a matter of fact this kind of marriage is seen in different nations, even in such which have already discarded exogamy or restricted it to portions of tribes, as f. i. among the Howas (*Schiller-Titz*):

brothers and sisters may marry each other, but they must not have the same mother.

But it would mean going too far were we to deny altogether that an empirically gained conviction of the injuriousness of consanguineous marriages played here any part. The Arabs, *f. i.* as *Schiller-Titz* shows, are perfectly familiar with this theory of injuriousness. A saying of the Haditt—the sacred tradition of the Arabs—runs: "Marry from among strangers, so that thou dost not beget a weak offspring." Later law-books also give expression to this view, *f. i.* that of *Badjuri*, the commentator of the Ibn-Quasim. He says: "Whoever wishes to obtain a noble breed must marry from a foreign country, just as one will obtain good fruit from a branch grafted into a foreign trunk." Similarly marriage with a "bint-amm" (the daughter of an uncle on the father's side) is also exhorted against.

The main reason of the laws enacted by civilised nations against marriage between nearest relatives is probably also not to be found every time in the intention to prevent a degeneration of the species. Legislators, œcumenical councils, etc., only very rarely express themselves directly in that sense. Pope *Gregory I.* (about 605) writes for instance to the Benedictine monk Augustinus who was sent out to convert the Anglo-Saxons: "A secular law of the Roman State permits marriage between the son and daughter of a brother and sister. But experience teaches that the offspring of such marriages cannot thrive." This opinion of the injuriousness of consanguineous marriages is expressed even more distinctly in the *Capitularia regum francorum*. There it is said that from marriages between relatives spring blind children and cripples, lame and blear-eyed, or offspring affected with other similar infirmities. Nor have the laws of civilised States which have from times immemorial endeavoured to restrict marriages between blood-relations proceeded exclusively from anti-sanguinistic motives. This is seen, to begin with, in the great difference of these restrictions as regards the degree of blood-relationship. Moreover, there is sufficient direct testimony to prove that these laws have principally been passed for the purpose of preventing, by the sharp

prohibition of marriage between blood-relations, prostitution among families, the accumulation of too large fortunes by a limited number of people, etc., etc.

Let us now examine into these laws regarding consanguineous marriages which have existed among the highest civilised nations in history and are at present in force in the most important European States. Relationship appears here as a relative impediment to marriage.

Moses prohibited marriage between blood-relations of the nearest degrees (with parents, grandchildren, full and half-sisters, sisters of father or mother) but was tolerant with regard to marriages between cousins and between uncle and niece. The Mosaic law demands categorically that daughters shall marry only from among the family to which they belong; this was an indirect incitement to marriage between blood-relations. Among the Spartans marriage between relatives in the direct line was prohibited. In Athens the marriage of near relations was in certain definite cases not permitted; on the other hand consanguineous marriage became a duty when a citizen left only an heiress, as the latter was in such a case compelled to marry the nearest of her relatives so that the fortune should remain in the family. The Roman law contained prohibitions of marriage between ascendants and descendants, between persons standing in the "respectus parentelæ" (that is, the relation between uncle or aunt on the one side and nephew or niece on the other), and between brothers and sisters.

Canon-law introduced severer regulations and prohibited every marriage in the direct line between ascendants and descendants, and in the collateral line not only marriages between brother and sister and between cousins, but even those between removed cousins (sobrini) up to the 6th degree, inclusive, of relationship according to Roman computation.

Since the eighth century the Church has endeavoured to restrict still more marriages between blood-relations and prohibited the same gradually up to the 7th degree of the Germanic calculation of relationship, which differs from the Roman method in so far as it does not like the latter include the neces-

sary number of births for the creation of the relationship but only the births of one side, and if the two are not alike those of the longer side up to the common ancestor. If therefore two persons are according to the canon-law reckoning of the degree of relationship (*computatio canonica*, or really *computatio Germanica*) related to one another in the 7th degree, they are according to Roman-law reckoning (*computatio civilis*) related in the 14th degree. Canon-law thus permitted marriage from the 14th degree of Roman computation. *Innocent III.*, however, restricted again (1215) the prohibitions up to the 4th degree of canonical computation, and this law is at the present day in force in the Catholic Church; but dispensation is (easily) obtained for the 3d and 4th degrees, and even for the 2d. According to Protestant Church-law the direct line is in all cases an annihilating, indispensable and public impediment to marriage, the collateral line is so in the first degree, that is with respect to brothers and sisters. There also used to be a dispensable impediment to marriage in the case of "*respectus parentelae*."

The Koran prohibits marriages between relations.

The German Imperial Code (*Deutsches Reichsgesetz*) of 1875 recognises the following impediments to marriage: relationship in the ascending and descending line, the relationship between full and half brothers and sisters. Marriages between cousins, between uncle and niece, and between aunt and nephew are by German law distinctly permitted. In Russia the secular legislation is like that of Canon-law (previous to *Innocent III.*) and it forbids marriage between blood-relations up to the 7th degree. In Switzerland marriages between cousins, uncle and niece, and aunt and nephew are distinctly prohibited—that is, without dispensation. In Austria also these marriages are prohibited, but among the Jewish subjects of that country marriage between cousins is allowed. In England, France, Italy, Holland and Roumania marriages between relatives of the 3d degree (uncle and niece, aunt and nephew) are either prohibited altogether or permitted only by dispensation, but those between relatives of the 4th degree (cousins) are permitted.

Modern legislations therefore materially differ on the

point; the two extremes are formed by the German and the Russian.

Historical and ethnographical remarks on endogamy and on marriage between relations (brothers and sisters).—In the attempt to grasp the problem of the origin of human civilisation and to discover historical foundations, too much influence has been attributed to one-sided definite factors. Whereas f. i. *Buckle* makes it appear that the fate of the human race is dependent entirely on soil and climate, *A. Reibmayr* and *Houston-Chamberlain* emphasize exclusively the effect of in-breeding and of race-mixture. There are doubtless also other external influences and inner forces concerned in the matter which have perhaps hitherto received no consideration. The investigation into the consequences of consanguineous marriages cannot therefore expect to gain overmuch from mere historical retrospects and analogies. Historical evidence is in this respect far too different from scientific proofs inasmuch as the former does occasionally, at least in such questions as those concerning us here, allow a little too much latitude to subjective tendency and the supplementing phantasy. But with regard to the enormous extent of our problem and indirectly also with regard to its importance we can learn something from historical observations. The more so, as statistics especially are not of any more decisive benefit to our subject than anthropological and ethnographical considerations which, it must be admitted, are probably of greater consequence than purely historical conclusions.

Where no in-breeding is adopted no distinct types at all of animal or human races are produced; and absolutely noble races can only be preserved by incessant breed-selection. The consequence of long-continued near in-breeding is a growing tendency to degeneration. The bad influences become apparent as a rule very slowly and only in the course of several generations; hence why they frequently escape observation in a single generation.

Historically it appears that man has always practised in-and-in-breeding, unless special causes making the struggle for existence vastly severer (over-population, geological disturbances,

etc.) produced temporarily a complete interruption. It would even seem that civilisation has constantly kept pace with the satisfaction of the desire to breed-in-and-in prevalent among the hordes and nations which made their mark in history, with the separation of in-bred castes and the avoidance of extensive crossing. Thus there arise not only physical characteristics but also important mental qualities which are the basis of predomination. Periods of more intensive admixture generally exhibit want of distinguishing features. (*Reibmayr*.) On the other hand pure and prolonged preservation of an absolutely strict in-breeding principle assists in producing a crystallisation of the main racial peculiarities and prevents further progress. A complete suppression of the natural selection leads finally, especially in the principal castes, to bodily and mental deterioration, that is, to an hereditary disturbance of the correlation between the single organs of the body and of the mind.

Just as great progress in the civilisation of any single nation is apparently impossible without a close in-breeding, so mankind in general would not make any marked advance without the inter-mixture of civilised nations with others physically superior to them though culturally on a lower level. The effect of such an intermixture is in the first instance the conservation and regeneration of the physical strength of the races, and in the second a transformation of mental faculties. Where two distinct races intermix the result is, to begin with, something heterogeneous. Some original characteristics however are not altered but transmitted to the offspring; and the tendency of the latter to revert to parental forms lasts for some time. The formation of extreme qualities is also delayed. But after having conquered this reversion, and after a short retrogression in the state of civilisation later generations attain higher degrees of culture comparatively much more rapidly.

The impartial observer will therefore direct his attention to the "optimum" of in-breeding; beginning with the possibility of procreation under equal pairing the chart reaches a certain height in the excellence of the offspring which shows a certain similarity to that of the procreators, and then sinks towards the other extreme which renders procreation impossible (maxi-

mal similarity of the procreators, equality of generations). The question as to the latitude of the "optimum" cannot at present be definitely answered. The conditions are probably not the same in man as in animals; in plants they are certainly different.

The classical endogamous nations of ancient times are above all the Egyptians, the Jews, and the Aryan Indians. The whole national State and legislation of the Jews *f. i.* were based upon the principle of in-and-in-breeding. The descendants of the tribe of Levi became the leading caste. But as the priests had no share in the inheritance of Israel, they were not as completely separated from the people as other ruling castes which on account of the riches they acquired were a class absolutely apart from others. The first-born from among the people belonged to the Lord and had to be redeemed; they seem therefore to have been destined to make up the full number of the Levites in case of the diminution of the latter. Provision was thus wisely made for a necessary selection and for fresh blood. The duty of Israel to keep themselves holy by strong seclusion from everything pagan became more and more a dogma. The exile, like the sojourn in Egypt, was a practical school of strict separateness. The laws relating to in-and-in-breeding underwent codification after the return from the Babylonian captivity (544 B. C.). The community assumed the obligation to prevent all mixed marriages with individuals not belonging to it. Women and children belonging to foreign tribes were turned away. That Judaism is still existing at the present day is partly due to the strict retention of the in-breeding principle by the later Pharisees and their successors the Rabbis. With such a comparatively small nation it almost follows as a consequence that in the post-exile period and especially afterwards during the dispersion all the Jews in certain places must have been related to each other and consanguineous marriages must have been quite common. Thus Tobit advises his son Tobias (at the time of the Maccabæans?) to take unto himself

a wife from among his relations, according to Jewish custom. But it was not permitted that a man should marry his mother, step-mother, sister or step-sister. After the final dispersion of the Jews there were only two countries in which they could intermix to a relatively greater extent, namely in Mahomedan Spain and in Poland. In Spain this intermixing took place with kindred semitic or half-semitic races. *Reibmayr* is inclined to attribute the circumstance that the Sephardim who sprang from this intermixture are a physically good-looking and mentally capable race, to the many marriages entered into with Arabs, etc. On the other hand he believes that the inclination of the Polish Jews to encourage intermixing must have been very small (under King Kasimir the Great the Jews were relatively well-off), or else the Ashkenazim would in spite of an eventual mental retrogression have become at least physically stronger and finer-looking. This evidence is however by no means exhaustive. The Sephardim have had since the dispersion a happier period than any other portion of the Jews, and this cannot have been without some effect upon their race; whereas in the case of the Polish Jews not only in-breeding, but poverty and its consequences must have played a very considerable and fateful part in their degeneration. Upon the whole it may be said that the Jewish nation which has on account of its hard struggle for existence been constantly subject to a certain weeding-out process, and whose leading caste has not kept absolutely aloof from the bulk of the people, has, during its course of a history extending over more than 100 generations, received from its in-and-in-breeding policy more good than harm: at the worst it may be said to have become a markedly fixed type with a striking hereditary intensity. The wonder really is that the Jewish nation exists yet at all.

In more recent and modern times the value of pure in-breeding may be judged from the English and the Japanese. On account of its insular position England is

cut off from the rest of the world. The last serious invasion took place 800 years ago; since then only a few thousand Netherlanders and Huguenots (therefore kindred blood) have been added, and thus the strongest present-day race in the world has sprung up. Perhaps the same thing has happened in Japan where there was also at first a good intermixture; afterwards insular seclusion was an important element in the formation of the race. The Japanese are the most important nation, at least among the Mongolians.

Instructive in this connection is perhaps also *Chamberlain's* reference to the Slavs. Qualified historians do not attribute to them, in spite of their great ability, any creative faculty or executive perseverance. The cause is supposed to lie in the fact that the majority of this large race has through intermixture with another race lost the physical characteristics of their ancestors (who were identical with the old Germans), and at the same time the mental qualities as well. The decline of prominent racial peculiarities through intermixture is still more apparent in Rome since Sulla and Marius, in the South American States (Peru), etc.

Peipers calls attention to the fact resulting from the observations and conclusions of *Lorenz*, that there is everywhere, and especially in rural districts, a far greater amount of blood-relationship and common ancestry than one is generally inclined to admit. The bondage of former centuries did not only mean an attachment to the soil; it also compelled marriage with fellow bond-servants of the opposite sex who were subject to the same bond-master. As a consequence there arose, according to *Lorenz*, relationships of unheard-of complication and nearness just among those classes of people of whom one likes to believe that they possess an inexhaustible material of mixed blood. The inhabitants of most rural places in Europe are related among themselves a hundred and a thousand times.

But those who lay particular stress on the dangers of in-and-in-breeding are also not short of examples which seem to prove that the unconscious popular

instinct interferes here for purposes of correction. Such an example is furnished by the Iroquois of North America. These Indians are divided in a number of clans, which represent smaller nations of the entire nation. Each of these clans elects its own chieftain, its members are heirs to each other, and each possesses its own symbol or totem. As regards marriage there is a fixed law. Each clan consists of many marriages. These have from times immemorial been arranged in the following way. No young man or maiden marries into his or her own clan. Marriages can under all circumstances only be entered into between members of two different clans. Each marriage means therefore an addition of fresh blood. Children owe allegiance to their mother's totem ("Maternal jurisdiction"). Father and mother remain in her clan. A similar method of totemism has (according to *Fison* and *Howitt*) also developed f. i. among the natives of Coopers Creek in South Australia.

Taking everything into consideration it would therefore appear that anthropologico-historical observations are rather inclined to prove that provided the quality of the material be good the production of noble races depends largely on the laws of breeding-in and weeding-out, and only to a small extent upon an admixture of blood, limited both as to time and method. The promiscuity desired by *Virchow*, *Ratzel* and others is in any case more dangerous than in-breeding.

History, both ancient and modern, and ethnology teach us even by some examples that nations and castes have been able to propagate themselves for longer or shorter periods by consanguineous marriages without exhibiting any gross signs of degeneration.

I will take here no notice of the incestuous unions between father and daughter, mother and son, brother and sister, spoken of in the mythologies and legends of uncivilised nations. A detailed description of these will be found in the work of *Schiller-Titz*. But it is necessary to mention that among great nations consanguineous marriages were not—and are not—only

not forbidden, but that they were—and are—entered into with predilection. The old Egyptians *f. i.* knew of no impediments to marriage; their Kings (especially the Ptolemæi) married not infrequently their own sisters; thus Cleopatra was the daughter of a marriage between brother and sister, the grandchild of another similar marriage and the grandchild of Berenice who was herself both niece and sister of her husband. Among the ancient Persians also, brothers and sisters used to marry each other, and so did father and daughter, mother and son. Descent from such marriage was even a condition of admission to the priesthood. The Athenians likewise permitted marriages between nearest relatives. Finally the ancient Peruvians also were in the habit of marrying their mothers, sisters and daughters. They had a law in force with regard to their ruling princes according to which the Inka was allowed to marry no one else but his own sister. This is said to have been continued during 14 generations without any signs of degeneration having been apparent in the last Inka.

These examples do not of course prove much. The non-existence of a prohibition is not synonymous with a great prevalence of incestuous marriages among the bulk of the people. But if the numerical proportion of consanguineous marriages is not ascertained exactly it is also not possible to fix their relation to the physical ability, mental development and degeneration of a people.

Schiller-Titz enumerates further among the uncivilised nations, tribes which live as yet in continued consanguinity. (The Baduwis among the Soudanese, the Bataks of Sumatra, the Arabs.) Although the small number of inhabitants in the interior villages of the Baduwis which consist of no more than 40 households have propagated themselves for 400 years by means of the closest consanguinity they are said to form a powerful race. According to *Krusemann*, no deformed or infirm are to be seen among them. The Baduwis are further distinguished by frankness and loyalty. From very early times it has been the rule with the Bataks to marry their cousins, that is daughters of an uncle from the mother's side, so that *boruni-datulang* (daughter of the mother's brother) became the

title of the betrothed and the wife. Nevertheless this nation is also said to be one of the most advanced in the Indian Archipelago. In contrast to the Malays they possess a powerful well-formed muscular system. Marriages with cousins have also been the rule with the Arabs for many centuries past.

Whereas other statements by observers who proceed from a contrary point of view contradict these customs of the Bataks and Arabs just mentioned, it seems at least certain that the peculiar constitution of the Baduwis practically enforces general blood-relationship.

Krascheninnikoff says that in Kamtschatka brothers marry their sisters, and *Cameron* reports the same with regard to the Wangoro. *Arrago* maintains that in Goam also brothers often marry their sisters; such unions are indeed considered to be most suitable and natural. Further it is known that among the Royal families of Baghirmi, Siam, Burmah, and Polynesia marriages between brothers and sisters are not uncommon. *Morgan* declares the Malay group-marriages of brothers, full and collateral, with their sisters as the most ancient relationship-system known hitherto, and one which dates from pre-historic times.

But of far greater importance as evidence are from our point of view the often-quoted observations of *A. Voisin* in the commune of Batz (Department of the lower Loire) which lies north of the mouth of the Loire on a peninsula surrounded by rocks. The 3,300 inhabitants (1865) of the same have only the most limited intercourse with the outside world. Marriages between blood-relations are very frequent among them. In 1864 there were there 46 consanguineous marriages, 5 between full nephews and nieces, 31 between children of full nephews and nieces, and 10 between nephews and nieces in the 8th Roman (fourth canonical) degree of relationship. Nevertheless the state of health in young and old up to the third generation was an excellent one, and only 2 of these 46 marriages proved sterile, the other 44 resulting in 172 healthy children.

Schiller-Titz gives similar figures from the statements of *Büchner* and *A. H. Huth* with regard to the inhabitants of

Schockland (Zuyder-Zee) and of a few fishing-villages on the Scotch coast.

Unfortunately a great deal depends in all these reports on the subjective tendency of their authors. What little regard for statistics the antagonists of consanguineous marriages sometimes exhibit may be seen f. i. from the protest of the Chief-Rabbi of France, *Isidor*, addressed to the Academy against the assertion of *Boudin* that on account of the high frequency of marriages between blood-relations among the Paris Jews the number of deaf-mutes among the latter is much higher in proportion than among Christians. *Isidor* could only find 9 deaf-mutes in the whole of his religious community of 25,000 people, and *Boudin* was able in a statistical rejoinder to prove only a portion of his assertion.

Effects of crossing and of self-fecundation in the vegetable world.—I follow here the explanation of *A. Schenk* (*Handbuch der Botanik* I. p. 7). It makes a great difference as far as the result of the pollination of plants is concerned whether the stigma is covered with pollen from the same or from another plant. In some cases the pollen of a plant has just as little effect upon its own stigmas as a similar quantity of inorganic dust. Or it may generate utricles which do not however reach the seed-buds. Or the latter may be reached and fecundated but they only form poor and unproductive seed-corns. All such plants can be designated as self-sterile. By far the greater number of plants are certainly not self-sterile, they do bring forth even if fecundated with their own pollen a greater or smaller number of seed-grains which are capable of development; but as a rule, though not always, the fecundation with strange pollen (crossing) acts more favourably than self-fecundation. Products arising from the crossing with a foreign stock (grown under different conditions) are on an average larger, stronger and more fruitful. They offer to injurious influences or to the joint action of other plants a much greater resistance than the products of self-fecundation. And if separate plants are kept through several generations under the same conditions and propagated only by crossing between them exclusively, so that the original individual peculiarities become more

and more alike from generation to generation, the crossing of such plants between them hardly produces in the end better results than self-fecundation. But if, on the other hand, such plants which have for a long time been subject to strict in-and-in-breeding, are crossed with a fresh stock, the favourable result of the crossing is the more striking. It cannot be denied that it is possible in the vegetable kingdom to observe and to ascertain under favourable circumstances the injurious effects of (close) in-and-in-breeding, seeing that the succession of the generations is a very rapid one and that there are opportunities to accumulate a very large amount of material for observation.

It may perhaps seem presumptuous for me, who am totally ignorant of Botany, to protest against it that in the whole of animated nature the importance of intermixture has been thought to be perfectly alike. I know that cross-planting is a favourite and highly successful method of florists for obtaining large, beautiful and otherwise prominent plants; the whole flora is evidence of this. But the animal world does not contain anything universally comparable, and for this reason I do not believe that the particularly significant conclusions of in-and-in-breeding are adaptable without any restrictions in man and animals alike.

In-and-in-breeding of animals living in a wild state. Experiences of animal breeders.—Breeders of animals generally assume that it is possible by familiar breeding to fix firmly and rapidly certain qualities in any one breed. If this is however continued for too long, and especially in the form of incestuous breeding, a weakness in the constitution supervenes, a sort of over-delicacy becomes apparent in the animals. Male animals exhibit diminished sexual functions or even impotence, females show decreased fruitfulness and tendency to abort, and young animals possess less vitality. Family breeding is therefore looked upon as a successful remedy occasionally indicated. In order to guard against degeneration through incestuous breeding, breeders use regeneration, that is an intermixture with the blood of strange animals (of the same race) which possess otherwise the above-mentioned qualities of the brood.

In-and-in-breeding plays an important part also in the case of animals living in a free state, on account of their sociability, f. i. among elephants. A remarkable phenomenon among the latter as also among different other wild animals is the existence of so-called "rovers." These are single and mature male animals belonging as a rule to no particular herd, which lead a sort of bachelor-life. They form according to Bölsche by surprising or otherwise seducing females of other families a constant reserve army of occasional regenerators.

The morbid predispositions and pathologic conditions in man supposed to be the results in the offspring of consanguinity in marriage.—

The opponents of consanguineous human marriages base their opposition principally upon the circumstance that marriages between blood-relations even if the contracting parties appear to be normal, often remain sterile, and that the children of such marriages are often endowed with insufficient vitality.

Mantegazza, Kohl, Waitz, Devay and others have found that 10%, and even 18%, of consanguineous marriages remain sterile; on the other hand, Darwin, Mitchell, Bourgeois, Devay, Howe, Remiss, Séquin, Dechambre, Périer, etc. maintain that consanguineous marriages are productive of slightly more children, and it has even been asserted that they are extraordinarily prolific. This contradiction may be explained in different ways. First of all, propagation depends as I also point out elsewhere upon different circumstances, it may therefore vary considerably also in continuously in-breeding marriages. It is further possible in such marriages for the unfruitfulness to commence in later generations only, a view not taken into consideration by all authors. (Compare the statements on the subject by Boudin and Balley.) Finally the name may soon disappear, though the number of descendants of such consanguineous marriages is generally large or of normal proportions, because the male members of the family die off and the blood is maintained in the female line only. Evidence in favour of this last supposition will be found in the works of Lorenz and Peipers.

As to the vitality of the newly-born children and the

descendants of consanguineous marriages we know absolutely nothing definite.

As results of marriage between blood-relations have also been observed all kinds of degenerative phenomena, especially blindness, deaf-mutism, idiocy, insanity, polydactylism and other malformations.

Generally-hereditary eye-diseases in the narrower sense of the word, or laterally-hereditary are: Myopia (or at least a predisposition to it), astigmatism, irideremia, coloboma of the iris, coloboma of the choroid, ectopia of the lens, lamellar cataract, retinitis pigmentosa, amaurotic family idiocy (*Sachs*), hereditary optic neuritis (*Leber*), glaucoma, congenital nyctalopia (*Cutler*), colour-blindness, microphthalmus.

To this list of eye-diseases ought to be added those which may with some justification be attributed to consanguinity. Their number is, if we wish to rely upon fairly ascertained conditions, only small. *Stilling* and *Laqueur* are likewise inclined to impute to consanguinity considerable responsibility for cases of very severe myopia. Amaurotic family idiocy attacks according to *Sachs* almost exclusively Jewish families only, and is therefore perhaps to a certain extent also connected with our subject. But by far the most important condition from our point of view is the retinitis pigmentosa. Heredity may be proved in about half the number of cases of this affection of the retina. A direct transmission from parents to children is generally rare and extends as a rule over two generations only. More frequent is the collateral heredity. The affection of the retina may be complicated with idiocy, partial deafness, deaf-mutism, polydactylism. Sometimes the affections last-mentioned alternate with atrophy of the retina in the same family. And just as these complications also appear as a consequence of consanguineous marriages, so a quarter or even a third of the individuals affected with retinitis pigmentosa are said to be descended from parents who were consanguineous in various degrees. But as we shall see, the percentage of consanguineous marriages is a much smaller one, it cannot indeed be doubted that consanguinity strengthens here materially the effect of heredity. Unfortunately the material existing in the literature of the subject

is comparatively unimportant. *Schmidt* gives the following computation :

	Number of Cases	Of Con- sanguineous Origin		Number of Cases	Of Con- sanguineous Origin
Leber	66	18	Bayer	19	5
Hocquard . . .	15	4	Nolden	14	3
Höring	4	1	Derigs	27	7
Bader	60	16	Agres	25	24
Pagenstecher . .	9	0	Davitson . . .	11	1
Mooren	34	9	Fano	7	1
Weöster	22	3	Dorie	6	0
Hutchinson . . .	23	8	Dentie	10	2
Wider	41	14	Schmidt	43	6
Sieghelm	73	9			
				513 Cases	131 = 25.5%

Agres calculated 22%, *Hirschberg* 25%, *Moren*, *v. Wecker*, *Jäger* 33%, *Liebreich* 40%. *Magnus* found in Breslau to every 10,000 inhabitants 8.4 blind Christians, whereas Jews showed in the same proportion 11 cases of blindness. The proportion between Jews and Christians is therefore 0.31:0.58. *Magnus* found in Jewish blind-asylums 17.6% of all cases of disease in the form of retinitis pigmentosa or retinal atrophy.

Finally cases of retinitis pigmentosa are so absolutely rare that this disease alone is hardly sufficient to justify the great literary allegation against consanguinity in marriage. It would hardly suffice to prevent about 1% of all marriages.

Boudin, the most zealous advocate of the injuriousness of consanguineous marriages, also considers them on the strength of old opinions to be mainly responsible for the more frequent congenital form of deaf-mutism. He maintains that 28.35% of all congenital deaf-mutes spring from consanguineous parents. But the statements of the different authors vary widely with regard to this percentage. *Scherbel* and *Peipers* give comprehensive compilations of the same. The numerical difference is calculated at 3.9-30.8% (*Huth*). The promised statistics of the German Imperial Board of Health are unfortunately not yet available. Existing statements greatly differing from each other do not make it seem very probable that consanguineous marriages are the most important cause of deaf-mutism. I should also like to mention that in different countries deaf-mutism is

uncommonly variable in frequency. According to *G. Mayr*, there are to every 10,000 individuals in the Argentine Confederation 42.45 male and 43.29 female deaf-mutes; in the United States of North America 4.57 male and 3.82 female; in the British Australian settlements only 3.88 male and 1.77 female; in Sweden 11.8 male and 8.77 female. But these figures do not correspond in the least to the different frequency of consanguineous marriages in these different countries. It is therefore at least very probable that the causes of deaf-mutism are very complicated, and that hygienic and social conditions also play an important part in its production. As a further proof of the injuriousness of consanguineous marriages *Boudin* has further cited the relative frequency of deaf-mutism among such classes and nations in which consanguineous marriages occur more frequently, that is especially among the Jews, and also among the negroes. *Liebreich* has calculated in the Berlin Asylum for deaf-mutes, 27 deaf-mutes to every 10,000 Jews, whereas to 10,000 Protestants there fall 6 deaf-mutes and to 10,000 Catholics 3.1. This author has also examined the eyes of 241 deaf-mutes in Dresden, Breslau and Berlin and found in 14 retinitis pigmentosa. Of these there were 8 individuals belonging to Jewish families. Whether consanguineous marriages had anything to do with these cases *Liebreich* could not ascertain. The year-book of Prussian statistics gives for the year 1871 in the province of Prussia 17.8 deaf-mutes per 10,000 inhabitants, in Pomerania 12.0, in Posen 14.4; whereas in the whole of Prussia there were per 10,000 Catholics 10.27 deaf-mutes, per 10,000 Protestants 9.55, per 10,000 Jews, 14.8. In 1880 the proportion was for Catholics 10.39, for Protestants 9.84, and for Jews 14.38. (Notice the contrast between *Liebreich's* figures regarding Catholics and these!)

Boudin has also drawn into the argument the geographical distribution of deaf-mutism. The number of people affected is supposed to grow with the seclusion of a locality and its consequent inaccessibility, suggesting of course that consanguineous marriages are thereby greatly facilitated. Thus there were reckoned in the Seine department per 10,000 people 2 deaf-mutes, in Corsica 14, in the high Alps 23, in the Canton

Berne 28. The proportion of deaf-mutes in the Austrian highlands amounts in Austria above the Enns 16.21 per 10,000, in Salzburg 27.81, in Styria 20.6, in Carinthia 49.45; whereas the proportion for the whole of Cisleithania is only 9.6. In the districts of Zell am See (Salzburg), St. Veith, and Wolfsberg (Carinthia), the proportion exceeds 50! No one can accuse here consanguinity alone. Apparently goitre and cretinism are also important factors, though it must be admitted that these two affections have also been spoken of in connection with consanguinity. There is however as yet no justification for this. *Peipers* found recently with regard to the Brühl asylum for deaf-mutes as follows: A little over 1.6% of the marriages which produce deaf-mute children are consanguineous; 2.3% of the deaf-mute children spring from consanguineous marriages. With regard to the asylum in Essen: Just over 2.25% of the marriages which produce deaf-mute children are consanguineous; 3.8% of the children appear to be of consanguineous origin; (for Neuwied: a little more than 4.6% of the marriages which produce deaf and dumb children are consanguineous; 6.1% of the deaf and dumb children spring from consanguineous marriages [small material!]).

Deaf-mutism is consequently by no means such an indubitable result of parental consanguinity as retinitis pigmentosa in spite of all statistical endeavours. But if the frequent occurrence of deaf-mutism among blood-relations is noticed again and again though possibly in association with other different causes, it becomes our duty, looking at the matter from the important practical point of view, to oppose as a rule consanguineous marriages.

Mental degeneration and insanity have also been advanced as decided consequences of marriages between consanguineous men and women. It is said that the descendants of such marriages exhibit diminished stimulativeness and vigourousness, weaker impulsiveness and a predominance of the phlegmatic temperament, a decreased resistibility against disturbances of nutrition and causes of disease. These assertions are hardly suitable for criticism. But if idiocy, epilepsy with insanity and even paralysis are named here, statistics ought to help us to

come to a decision if there are undoubted foundations for the statement, but this can hardly be said to be the case. A pertinent psychiatric-statistical contribution has been recently given us by *Peipers*; it considers a part of the pathogenic predispositions and diseases coming into question, and is highly valuable both as a criticism and in its data. I myself base my observations on the fuller statistics by *Mayet* mentioned in the subsequent chapter.

In the case of congenital malformations of the fingers, heredity can, as is well known, be demonstrated in many cases. It is however possible that here also consanguinity comes into question as a factor aggravating the effect of heredity. But neither these nor other congenital malformations drawn into the discussion can claim any greater significance.

Statistics.—The numerical method on a large scale has hitherto not been adopted for the purpose of deciding the question as to the injuriousness of consanguineous marriages. The older statistical attempts are on account of the smallness of the material upon which they are based and on account of the manner in which their conclusions are drawn so unreliable that there is every justification for taking here into consideration a few compilations by *Peipers* on the subject, and also principally the latest statistics on consanguineous marriage namely those of *P. Mayet* who has tried to utilise very extensive data which have never been requisitioned hitherto. Just now the subject is of actual importance, seeing that some little time ago the Federation of German Governments have decided upon a current census of deaf-mutes in the German Empire to be undertaken by the Imperial Board of Health.

Mayet recognised as the first important point the necessity of obtaining information as to the percentage of the population springing from consanguineous marriages. He thinks he can ascertain indirectly the percentage of consanguineous descendants by ascertaining first the number of marriages between blood-relations. The number of these marriages is at present being established in France, Bavaria, Prussia and Hungary. It is also known though for a number of years only, with regard to Alsace-Lorraine, Saxony and Italy. Finally there exists t

statistical raw material to establish it for Brunswick, Saxe-Meiningen, Hesse, Anhalt and Schaumburg-Lippe, and also for Spain.

The Italian Registrar-General of Statistics has his doubts as to the exactness of the reports issued by the communal authorities, because marriages between cousins do not require there any dispensation.

The respective conditions in France are clearly seen from Tables I and II.

Taken together they give information over a period of 43 years with regard to 126,945 marriages between blood-relations, but it is certain that they do not include all such marriages which have taken place in France. The increase in the proportion during the decade of 1861-1871 (Table I.) may be due to a Ministerial ordinance issued at that time enjoining most careful investigation in that direction. The steady diminution in the average figures (Table II.) may consequently be explained in a similar way, that the regulation in question has gradually been permitted to fall into desuetude. How much of it is due to a possible recognition of the injuriousness of consanguineous marriages it is difficult to say.

TABLE I.

(Source: *Stieder*, Statist. Mittheil. Elsass-Lothringen, Part 12.)
CONSANGUINEOUS MARRIAGES IN FRANCE FROM 1853-1871:

Period	Marriages Altogether	Including Consanguineous Marriages	Per 1,000 Marriages there were Consanguineous Marriages
1853-55	834,840	7,804	9.34
1856-60	1,474,320	14,735	9.99
1861-65	1,508,914	17,937	11.89
1866-71	1,663,239	20,896	12.56

TABLE II.

(Source: Statistique de la France, Années 1875-1898.)

Years, Quinquennial Averages, Total Sum, Total Average	Marriages					Per 1000 Marriages of all Classes there were Consan- guineous Marriages			
	Of all Classes	Between Blood Relations				Of all Classes	Between		
		Of all Classes	Cousins	Uncle and Niece	Nephew and Aunt		Cousins	Uncle and Niece	Nephew and Aunt
1875	300,427	3483	3242	178	63				
1876	291,393	3313	3063	179	71				
1877	278,034	2962	2692	178	92				
1878	279,580	3165	2936	182	47				
1879	282,770	3047	2841	146	60				
1875-79 average	286,442	3104	2955	173	66	11.15	10.32	0.60	0.23
1880	279,040	3240	3008	175	47				
1881	282,079	2925	2732	152	41				
1882	281,000	3052	2857	160	35				
1883	284,510	3139	2925	165	49				
1884	289,555	3147	2948	159	40				
1880-84 average	283,252	3101	2894	162	45	10.95	10.22	0.57	0.16
1885	283,170	3155	2909	140	37				
1886	281,208	3059	2801	195	63				
1887	277,000	3297	2476	178	143				
1888	270,845	2755	2552	166	35				
1889	272,003	2778	2552	231	95				
1885-89 average	275,035	3029	2770	184	75	10.87	9.94	0.66	0.87
1890	229,332	2456	2321	101	34				
1891	235,455	2709	2597	140	26				
1892	290,310	3167	2949	142	76				
1893	287,204	2604	2416	213	35				
1894	280,062	2590	2452	144					
1890-94 average	253,813	2730	2547	123		9.62	8.97		0.65
1895	282,013	2820	2597	129					
1896	290,171	2504	2455	120					
1897	291,402	2557	2762	105					
1898	287,179	2734	2680	154					
1895-98 average	287,432	2720	2601	150		9.45	8.45		0.55
In 100 years together average	281,430	3110	28573	5077		10.45	9.70		0.75

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Table III. deals with Bavaria. Here also the average figures become less every 5 years. The frequency of consanguineous marriages in Bavaria is only 6/10 of that in France.

TABLE III.

MARRIAGES BETWEEN BLOOD-RELATIONS IN THE KINGDOM OF BAVARIA FROM 1879 TO 1899.

Years. Quinquennial Averages, Total Sum, Total Average	Marriages						Per 1000 Marriages of all Classes there were Consan- guineous Marriages			
	Of all Classes	Between Blood Relations				Of all Classes	Between			
		Of all Classes	Between				Of all Classes	Cousins	Uncle and Niece	Nephew and Aunt
			Cousins	Uncle and Niece	Nephew and Aunt					
1879	35,066	330	283	34	13					
1881	35,538	315	266	38	11					
1882	37,801	311	271	25	15					
1883	35,985	322	272	31	19					
1884	36,733	321	287	29	5					
Quinquennial Average	36,225	320	276	31	13	8.83	7.62	0.85	0.36	
1885	36,496	311	273	27	11					
1886	37,324	262	231	19	12					
1887	37,436	242	216	16	10					
1888	37,809	245	221	17	7					
1889	39,515	259	242	11	6					
1885/89 Average	37,716	264	237	18	9	7.00	6.28	0.48	0.24	
1890	40,004	271	243	22	6					
1891	41,400	206	196	9	1					
1892	41,683	165	158	7	—					
1893	41,605	246	213	23	10					
1894	42,623	235	205	21	9					
1890/94 Average	41,463	225	203	17	5	5.43	4.90	0.41	0.12	
1895	43,273	262	235	21	6					
1896	45,258	245	217	23	5					
1897	46,481	249	227	16	6					
1898	48,464	295	269	21	5					
1899	50,783	203	185	14	4					
1895/99 Average	46,852	251	227	19	5	5.36	4.84	0.41	0.11	
The 20 years 1879—99 to- gether Average	811,277	5295	4710	424	161					
	40,564	265	236	21	8	6.53	5.82	0.52	0.19	

Table IV. contains the figures for Prussia. They are in striking agreement with those for Bavaria. *Mayet* gives also the two averages for the longer periods taken together.

TABLE IV.

MARRIAGES BETWEEN BLOOD-RELATIONS IN THE KINGDOM OF PRUSSIA FROM 1875 TO 1899.

(Source: Parts of "Prussian Statistics" which deal with births, marriages, etc.)

Years. Quinquennial Averages. Total Sum, Total Average	Marriages					Per 1000 Marriages of all Classes there were Consan- guineous Marriages			
	Of all Classes	Between Blood Relations				Of all Classes	Between		
		Of all Classes	Cousins	Uncle and Niece	Nephew and Aunt		Cousins	Uncle and Niece	Nephew and Aunt
1875	230,541	1557	1413	106	38				
1876	221,712	1342	1227	96	19				
1877	210,337	1093	1773	106	54				
1878	207,754	1847	1695	122	30				
1879	206,752	1711	1522	159	30				
1875-79 average	215,479	1090	1526	130	34	7.84	7.08	0.60	0.16
1880	208,456	1055	1519	133	33				
1881	209,550	1000	1490	144	26				
1882	217,230	1622	1470	116	36				
1883	220,745	1702	1528	145	26				
1884	225,030	1655	1536	120	20				
1880-84 average	210,304	1071	1500	132	30	7.72	6.97	0.61	0.14
1885	230,707	1053	1450	137	27				
1886	231,555	1563	1350	157	26				
1887	220,000	1540	1423	111	15				
1888	233,421	1520	1408	103	15				
1889	240,000	1513	1375	110	28				
1885-89 average	233,342	1501	1415	124	22	6.69	6.06	0.53	0.09
1890	244,557	1345	1235	57	20				
1891	245,906	1353	1240	114	20				
1892	245,447	1442	1252	130	21				
1893	245,345	1305	1262	55	15				
1894	250,000	1402	1203	100	0				
1890-94 average	247,064	1357	1256	105	17	5.61	5.12	0.42	0.07

Years. Quinquennial Averages, Total Sum, Total Average	Marriages					Per 1000 Marriages of all Classes there were Consan- guineous Marriages			
	Of all Classes	Between Blood Relations				Of all Classes	Between		
		Of all Classes	Between				Of all Classes	Between	
			Cousins	Uncle and Niece	Nephew and Aunt			Cousins	Uncle and Niece
1895	253,729	1300	1232	109	19				
1896	264,822	1376	1263	96	17				
1897	274,693	1409	1282	103	24				
1898	280,344	1227	1126	86	15				
1899	287,408	1393	1289	86	8				
I 295/99. average	272,209	1353	1238	96	19	4.97	4.55	0.35	0.07
The 25 years 1875—99 to- gether average	5,922,439	38,310	34,764	2933	613				
	236,898	1532	1391	116	25	6.47	5.87	0.49	0.11

TABLE IVA.

Bavaria	6.53	} Marriages between blood-relations.
Prussia	6.47	
Bavaria	5.82	} Marriages between cousins.
Prussia	5.87	
Bavaria	0.52	} Marriages between uncle and niece.
Prussia	0.49	

A considerable difference is seen only in the figures (based on small numbers) relating to marriages between nephew and aunt. They are for Bavaria 0.19⁰⁰/₀₀ and for Prussia 0.11⁰⁰/₀₀.

Table V. gives the Hungarian figures which are very similar.

The circumstance that the figures for Prussia and Bavaria are so similar appears to speak for their accuracy, but *Mayet* thinks they are certainly too low. The returns of the particulars of marriages are namely often filled in subsequently from the marriage-registers, but the latter have no column with respect to the consanguinity of the parties contracting the marriage. The instructions sent out in Prussia in the year 1874 as to the filling-in of the marriage-returns are altogether defective. But the numbers of the present Prussian statistics of consanguineous marriages supply at least minimal figures which are useful in different ways.

TABLE V.

FOR THE YEAR 1900, RELATING TO 169,687 MARRIAGES OF ALL CLASSES.

(Source: Ungar. statist. Handbuch, 1900.)

	Marriages Between		
	First Cousins	Uncle and Niece	Aunt and Nephew
In Hungary, in one year . . .	812	49	3
In Croatia	109	10	1
Together	921	59	4
that is %:			
In Hungary, in one year . . .	0.55	0.03	0.00
In Croatia, in one year . . .	0.52	0.05	0.00
Together	0.54	0.03	0.00

In England it seems marriages between blood-relations are much more frequent.

In any event, a conclusion as to the percentage of consanguineous descendants in proportion to the whole of the number of children born in wedlock can be drawn from the percentage of consanguineous marriages in proportion to the number of marriages as a whole, if, firstly consanguineous and crossed marriages are equally fruitful, and secondly if the newly-born infants of consanguineous marriages possess the same vitality as the children of crossed marriages. As far as I am concerned I am not at all inclined to admit the parallelism so unrestrictedly as *Mayer* does. The number of births depends as we know from experience upon a variety of circumstances. It is a general natural law that the greater the danger to the descendants in the struggle for existence the greater the propagative faculty. Epidemics f. i. tend to strengthen it. Thus *Moses* says: (Book II. Chap. i.) "But the more they afflicted them the more they multiplied and the more they spread abroad." A

natural consequence of strict in-breeding is rather a relaxation of the propagative energy. Jews have at the present day on an average fewer children than other nationalities (presumably this is not the effect of in-breeding only) but they also have a smaller infantile mortality and a longer average duration of life. With a small number of consanguineous marriages calculations with respect to a few hundred of their children have repeatedly been made; but they showed rather greater numbers. For the present we may therefore assume at least hypothetically that among legitimately-born children the offspring of blood-relations occur in the same numerical proportion as those of non-consanguineous parents. *Mayet* moreover takes the relative number of consanguineous marriages in proportion to 1,000 marriages as a whole, also as the available relative number for the occurrence of all sexual unions, consequently for the entire number of consanguineous descendants among the population.

In Prussia the minimum number of consanguineous marriages is 6.5 per mille. If we take for Prussia or the whole German Empire respectively this relative figure with respect to consanguineous offspring, it would mean with a population of 56.3 millions of the Empire the very considerable number of 365,950 descendants of consanguineous marriages living among the general population.

In the Prussian lunatic asylums it is always ascertained in the case of new inmates whether and in what degree their parents were consanguineous. In the published returns of these statistics "heredity" is entered when the following questions are answered in the affirmative on admission into the asylum: Have mental or nervous disorders, drunkenness, suicide, crime, striking qualities or talents been present in father, mother, (I.); grandfather, grandmother, uncle, aunt, (a) on the father's side, (b) on the mother's side, (II.); brothers or sister, (III.)? The entry "heredity" means therefore in these statistics not only a transmission of the same mental disease, but much more. An abnormally increased nervous life, either towards excellence or towards decay, and that not only in one of the absolutely nearest ancestors, is sufficient to establish "hereditary predisposition."

TABLE VI.

Heredity is proved in

Year	1. Simple Insanity				2. Paralytic Insanity			
	M.		F.		M.		F.	
	Admissions	Of which heredity is proved in % with heredity	Admissions	Of which heredity is proved in % with heredity	Admissions	Of which heredity is proved in % with heredity	Admissions	Of which heredity is proved in % with heredity
A. On the number								
1884	2590	514	3020	995	544	136	205	31
1885	2538	739	3167	991	963	137	244	26
1886	2999	912	3390	1044	1085	173	227	37
1887	3057	866	3510	1101	1102	174	242	27
1888	3002	801	3552	1149	1141	191	244	51
1889	3168	877	3753	1220	1217	237	293	50
1890	3438	1008	3974	1309	1315	245	309	33
1891	3354	1009	3992	1292	1467	229	394	43
1892	3407	1034	3039	1349	1363	270	356	57
1893	3739	1080	4231	1370	1501	280	364	65
1894	3795	1231	4429	1445	1488	269	401	82
1895	3770	1242	4317	1475	1509	325	429	93
1896	4098	1236	4453	1437	1646	309	479	69
1897	4254	1355	4544	1633	1592	309	426	77
1898-1900 Total	47,377	14,503	54,718	17,815	32,564	5,233	3293	15,00
1898-1900 Total	47,377	14,503	54,718	17,815	32,564	5,233	3293	15,00
B. On the number of Insane admitted whose Parents were con-								
1884	27	15	25	11	3	2	—	—
1885	24	18	22	17	3	2	—	—
1886	17	11	21	15	1	3	—	—
1887	12	5	20	11	3	2	1	—
1888	20	12	19	12	3	—	1	—
1889	20	14	19	11	3	2	1	1
1890	23	15	16	13	5	3	1	1
1891	25	15	19	10	5	4	1	1
1892	23	16	20	20	5	4	1	—
1893	33	22	20	19	6	1	—	—
1894	27	15	19	13	10	7	1	—
1895	25	21	25	19	6	1	1	—
1896	27	24	29	22	5	5	1	1
1897	35	29	29	25	12	5	1	—
1898-1900 Total	335	241	326	215	55	41	45	40.00

TABLE VII.

(Compiled by *Mayet* from the

For	Hereditarily predisposed among		
	Males	Females	Both together
1. Simple Insanity			
From patients of all classes . . .	30.01% = 100	32.56% = 100	31.7% = 100
From patients whose parents were consanguineous . . .	71.30% = 233	66.57% = 205	69.0% = 218
2. Paralytic Insanity			
From patients of all classes . . .	15.06% = 100	15.86% = 100	15.6% = 100
From patients whose parents were consanguineous . . .	45.24% = 267	40.00% = 252	45.3% = 257

Prussian lunatic asylums:

3. Insanity with Epilepsy						4. Imbecility and Idiocy						Year
M.			F.			M.			F.			
Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	
517	92		354	72		434	92		284	67		1884
339	60		261	62		426	111		280	83		1885
385	75		281	70		505	123		213	75		1886
369	66		269	63		506	118		328	65		1887
381	76		338	59		523	130		387	105		1888
390	97		311	74		533	163		335	93		1889
457	109		309	82		540	179		422	111		1890
470	106		374	98		667	186		418	109		1891
603	133		439	128		670	175		418	118		1892
786	176		578	126		1066	352		698	201		1893
834	237		667	194		1090	336		765	228		1894
810	262		583	178		924	308		614	199		1895
847	267		550	173		964	292		640	215		1896
981	301		582	168		976	286		659	193		1897
8170	2057	25.18	5897	1547	26.23	9824	2851	29.02	6592	1862	28.25	14 yrs. together

consanguineous (as Uncle and Niece, Aunt and Nephew, Cousins)

0	3		1	—		1	—		5	—		1884
—	—		2	2		4	3		4	1		1885
1	1		—	—		11	3		5	1		1886
—	—		3	1		7	5		7	3		1887
2	—		—	—		14	6		7	1		1888
—	—		5	3		7	3		8	1		1889
2	1		—	—		9	6		5	4		1890
—	—		1	1		8	5		12	7		1891
2	1		2	2		12	5		3	2		1892
5	4		2	2		15	10		9	3		1893
9	5		8	5		17	8		10	3		1894
6	2		3	1		8	3		9	5		1895
3	3		1	1		15	4		7	3		1896
7	—		6	4		6	3		10	4		1897
45	20	44.44	34	22	64.71	136	64	47.06	101	38	37.62	14 yrs. together

preceding table.) Cases with proved heredity.

For	Hereditarily predisposed among		
	Males	Females	Both together
3. Insanity with Epilepsy			
From patients of all classes . . .	25.18% = 100	26.23% = 100	25.6% = 100
From patients whose parents were consanguineous. . . .	44.44% = 176	64.71% = 247	53.2% = 208
4. Imbecility and Idiocy			
From patients of all classes . . .	29.02% = 100	28.25% = 100	28.7% = 100
From patients whose parents were consanguineous. . . .	47.06% = 162	37.62% = 133	43.0% = 150

TABLE VIII. Heredity is proved in Prussian asylums on the

Year	1. Simple Insanity						2. Paralytic Insanity					
	M.			F.			M.			F.		
	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity
C. As												
1884	25	17		22	9		3	2		—	—	
1885	22	16		18	15		3	2		—	—	
1886	13	8		18	12		3	2		—	—	
1887	12	5		18	9		3	2		1	—	
1888	18	11		18	11		3	—		—	—	
1889	17	12		18	10		2	1		1	—	
1890	22	14		16	13		8	3		—	—	
1891	24	17		15	8		4	4		1	1	
1892	20	13		27	18		7	3		1	1	
1893	27	18		27	17		6	1		1	—	
1894	25	16		15	10		10	7		1	—	
1895	21	18		26	17		6	1		1	—	
1896	25	22		29	22		6	3		1	1	
1897	31	25		26	22		12	5		1	—	
14 yrs. together	302	212	70.2	293	193	65.9	78	36	46.2	9	3	33.3
D. As Uncle												
1884	2	1		3	2		—	—		—	—	
1885	2	2		4	2		—	—		—	—	
1886	4	3		3	3		2	1		—	—	
1887	—	—		2	2		—	—		—	—	
1888	2	1		1	1		—	—		—	—	
1889	3	2		1	1		1	1		1	1	
1890	1	1		—	—		—	—		—	—	
1891	1	1		4	2		1	—		—	—	
1892	3	3		3	2		1	1		—	—	
1893	6	4		3	2		—	—		—	—	
1894	2	2		3	2		—	—		—	—	
1895	4	3		1	1		—	—		—	—	
1896	2	2		—	—		2	2		—	—	
1897	4	4		2	1		—	—		—	—	
14 yrs. together	36	29	80.6	30	22	73.3	7	5	71.4	1	1	100
E. As Nephew												
1884	—	—		—	—		—	—		—	—	
1885	—	—		—	—		—	—		—	—	
1886	—	—		—	—		—	—		—	—	
1887	—	—		—	—		—	—		—	—	
1888	—	—		—	—		—	—		—	—	
1889	—	—		—	—		—	—		—	—	
1890	—	—		—	—		—	—		—	—	
1891	—	—		—	—		—	—		—	—	
1892	—	—		—	—		—	—		—	—	
1893	—	—		—	—		—	—		—	—	
1894	—	—		1	1		—	—		—	—	
1895	—	—		1	1		—	—		—	—	
1896	—	—		—	—		—	—		—	—	
1897	—	—		1	1		—	—		—	—	
14 yrs. together	—	—		3	3	100	—	—		—	—	

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3. Insanity with Epilepsy						4. Imbecility and Idiocy						Year
M.			F.			M.			F.			
Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	Admissions	Of which heredity is proved in	% with heredity	
12	1	1	1	—	—	1	—	—	5	—	—	1884
—	—	—	2	2	—	4	3	—	3	1	—	1885
—	—	—	—	—	—	3	—	—	4	1	—	1886
—	—	—	2	1	—	7	5	—	7	3	—	1887
2	—	—	—	—	—	12	4	—	5	1	—	1888
—	—	—	4	2	—	6	3	—	7	1	—	1889
2	1	1	—	—	—	3	3	—	4	3	—	1890
—	—	—	1	1	—	8	5	—	10	6	—	1891
2	1	1	2	2	—	12	5	—	3	2	—	1892
5	4	4	1	1	—	13	9	—	9	3	—	1893
5	5	5	8	5	—	17	8	—	8	3	—	1894
6	2	2	3	1	—	8	3	—	8	4	—	1895
2	2	1	1	1	—	12	3	—	5	2	—	1896
7	—	—	6	4	—	7	2	—	10	4	—	1897
39	16	41.0	31	20	64.5	123	57	46.3	88	34	38.6	14 yrs. together

and Niece

3	2	—	—	—	—	—	—	—	1884			
—	—	—	—	—	—	—	—	—	1885			
1	1	—	—	3	2	—	—	—	1886			
—	—	1	—	—	—	—	—	—	1887			
—	—	—	—	2	1	2	—	—	1888			
—	—	1	1	1	—	1	—	—	1889			
—	—	—	—	1	1	1	1	—	1890			
—	—	—	—	—	—	2	1	—	1891			
—	—	—	—	—	—	—	—	—	1892			
—	—	1	1	2	1	—	—	—	1893			
1	—	—	—	—	—	2	1	—	1894			
—	—	—	—	—	—	1	—	—	1895			
1	1	—	—	3	1	2	—	—	1896			
—	—	—	—	1	1	—	—	—	1897			
6	4	66,7	13	2	66,7	13	7	53,8	13	3	23,1	14 yrs. together

and Aunt

[illegible]

Let us examine now *Mayer's* table with regard to this heredity (Table VI.). The items in the sum-total of the Part A refer to:

	Male Patients.	Female Patients.
Simple insanity	47,000	55,000
Paralytic insanity	18,000	5,000
Insanity with epilepsy	8,000	6,000
Imbecility, Idiocy	10,000	7,000

A fairly large material. Near each column of admissions there is a column giving the percentage of hereditary cases.

The table gives in a satisfactory manner the items of those mental diseases where the parents were consanguineous. The information on the point refers to a fairly considerable material:

	Male Patients.	Female Patients.
Simple insanity	338	326
Paralytic insanity	85	10
Insanity with epilepsy	45	34
Imbecility, Idiocy	136	101

Together in mentally de- ranged descendants of con- sanguineous marriages	—	—
	604	471

We can see from this by comparing the percentages on the same side that the number of those who are hereditarily predisposed is in the insane whose parents were consanguineous much larger, as a rule more than twice as large, than in those who were descended from non-consanguineous marriages. Table VII. gives a clearer view of this conclusion. The comparison between the two relative figures is made easier by taking the relative figure for patients as a whole as 100. We find in the case of consanguineous descendants 218, 257, 208, 150, hereditarily predisposed, against 100 patients of all classes.

Mayer explains, as I believe, these figures quite correctly; the mental diseases arise often on the basis of unfavourable family-predispositions. If the same family-predisposition is present in both consanguineous parents the effects of the heredity are considerably increased. In simple insanity, paralytic insanity,

and insanity associated with epilepsy, heredity plays in the case of consanguineous descendants a part which has the effect of more than doubling the number of cases. As regards imbecility and idiocy, heredity seems to play a less important part.

Table VIII. gives the data separately with regard to the degree of consanguinity. (Under C. D. E.)

TABLE IX.
(Compiled by *Mayet* from Tables VI. and VIII.)

Cases with proved heredity

	Hereditarily predisposed among		
	Males	Females	Both together
1. Simple Insanity			
From patients of all classes	30,61 % = 100	32,56 % = 100	31,7 % = 100
From patients whose parents were cousins	70,2 „ = 230	65,9 „ = 202	68,1 „ = 215
From patients whose parents were uncle and niece	80,6 „ = 263	73,3 „ = 225	77,3 „ = 244
2. Paralytic Insanity			
From patients of all classes	18,06 % = 100	15,86 % = 100	17,6 % = 100
From patients whose parents were cousins	46,2 „ = 256	33,3 „ = 210	44,8 „ = 255
From patients whose parents were uncle and niece	71,4 „ = 395	100 „ = 631	75,0 „ = 426
3. Insanity with Epilepsy			
From patients of all classes	25,18 % = 100	26,23 % = 100	25,6 % = 100
From patients whose parents were cousins	41,0 „ = 163	64,5 „ = 246	50,0 „ = 195
From patients whose parents were uncle and niece	66,7 „ = 265	66,7 „ = 254	66,7 „ = 261
4. Imbecility and Idiocy			
From patients of all classes	29,02 % = 100	28,25 % = 100	28,7 % = 100
From patients whose parents were cousins	46,3 „ = 160	38,6 „ = 137	43,1 „ = 150
From patients whose parents were uncle and niece	53,8 „ = 185	23,1 „ = 82	38,5 „ = 134

Table IX. facilitates the comparison in certain other directions. According to this table it seems that in simple insanity, in paralytic insanity, and in insanity with epilepsy, hereditary predisposition is demonstrable to a greater extent in the offspring of uncle and niece than in that of cousins; it is therefore more pronounced where the relationship is nearer.

It is different with imbecility and idiocy, just as we should

expect, considering that in these affections hereditary predisposition is altogether rare.

Subdivision E. of Table VIII. which refers to the descendants of marriages between nephew and aunt shows in the group of Table IX. hardly any cases of insanity. That such unions are in any way protective against insanity is far less likely than that they are (on account of the advanced age of most aunts) much less fruitful.

Table X. prepared by *Mayet* gives the proportion of descendants of consanguineous marriages to the entire number of sufferers from the forms of insanity already mentioned, and from idiocy.

TABLE X.
PROPORTIONATE NUMBER OF PATIENTS WHOSE PARENTS ARE
CONSANGUINEOUS TO THE ENTIRE NUMBER OF PATIENTS
OF EACH FORM OF DISEASE :
(Compiled from Table VI.)

	1. Simple Insanity		2. Paralytic Insanity		3. Insanity with Epilepsy		4. Imbecility and Idiocy	
	Patients	Of whom with without proved heredity	Patients	Of whom with without proved heredity	Patients	Of whom with without proved heredity	Patients	Of whom with without proved heredity
A. Insane of all Classes								
M.	47379	14503	18233	3203	8170	2057	9824	2851
F.	54718	17815	4703	746	5807	1547	6592	1862
M. & F. together	102097	32318	69779	4039	14067	3604	16416	4713
B. Insane whose Parents were consanguineous								
M.	338	241	85	41	45	20	136	64
F.	326	218	10	4	34	22	101	38
M. & F. together	664	459	95	45	79	42	237	102

The Insane whose Parents were consanguineous (B), average per 1000 insane persons (A):

M. & F. together	6.5	14.2	3.0	4.1	11.1	2.9	5.0	11.7	3.5	14.4	21.6	11.5
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Whilst of 1000 inhabitants of Prussia at least 6.47 descendants spring from consanguineous marriages

From these figures it would appear that the proportion of consanguineous descendants suffering from the respective forms of insanity to the total number of individuals who do not seem to be hereditarily predisposed in the sense explained above, is smaller than their proportion to the entire population. *Mayet* expects according to the above given minimum figure of 6.5 descendants from consanguineous marriages per 1,000 of population to find also 6.5 per mille of patients of this class in proportion to the whole number of patients of each class, but instead of 6.5 he gives above: of simple insane only 3.0, of paralytics only 2.9, and of epileptics only 3.5. On the other hand idiocy stands here differently. The proportion of 6.5 is exceeded and becomes instead 11.5.

Table XI. serves for the special study of the conditions referring to the children of cousins and to those of uncle and niece.

This table shows in both kinds of marriages the same results where there is no gross hereditary predisposition to the affections mentioned; as to the three forms of insanity the children are half as frequently insane as the rest of the population. As regards idiocy the conditions are again of a totally opposite character. Here the "hereditarily non-predisposed" progeny of married cousins are relatively almost doubly, and those of uncle and niece almost trebly so much affected as the general population.

Mayet has developed this latter part of his statistical computation for the purpose of establishing how consanguinity acts per se, that is exclusively by the absence of outside blood, and quite apart from the aggravation of the effect of heredity. He thinks he can draw the conclusion that in idiocy the disease is produced by consanguinity as such, whereas in the other three forms of insanity consanguinity appears to be rather an advantage in the case of "hereditarily non-predisposed" persons.

Personally I can admit with absolute certainty only that much, that in idiots also, if in addition to consanguinity the well-known stigmas of hereditary predisposition are also manifestly present, the effect is a vastly greater one. I should further conclude that descent from consanguineous parents does not

per se predispose to insanity. But on the other hand I think it would be going too far to admit like *Mayet* a favourable influence with regard to a large number of diseases. That idiocy may become manifest in the descendants of consanguineous marriages even where the gross (physical but especially psychical) symptoms of hereditary predisposition are absent, I can easily explain by the law of heredity laid down above, namely, that two similar predispositions which on account of their slight intensity are not recognisable in the parents individually, combine in the offspring and acquire by this combination such an energy that they appear as a decided characteristic. For this reason I have already at the commencement of my remarks taken into consideration the aggravating influence of consanguinity upon the effect of heredity.

Of great value is *Mayet's* arithmetical proof that of 16,416 idiots admitted in Prussian asylums only 237 were descendants of consanguineous marriages. Even if we add to this number those idiots who are maintained in their parents' homes, the proportion is not such as to justify a serious view of the injuriousness of consanguineous marriages. There are probably about 200,000 consanguineous descendants among the inhabitants of Prussia.

In all likelihood the conditions as regards congenital deaf-mutism and retinitis pigmentosa are similar to those regarding idiocy. It was also *Mayet* who has furnished statistical proofs in favour of this opinion with respect to deaf-mutism. *L. Hirsch* has found the percentage of consanguineous marriages undoubtedly higher among the congenitally-blind than among the other blind. Of 340 congenitally-blind, 16 that is 5% were descended from consanguineous marriages, of 50 blind persons with retinitis pigmentosa 9, that is 18%. This author maintains that it is quite clear that this percentage of consanguineous marriages exceeds by far that among the non-blind population. Many authors, *f. i.* *Leber* have in the case of retinitis pigmentosa found even a higher percentage of consanguineous parents than 18%. (See Chapter XV.)

Practical conclusions.—The foregoing facts and remarks do not therefore contain anything which compels us

to see in the results of consanguineous marriages more than an aggravation of the effects of heredity through the consanguinity. It has not been possible to establish without doubt that the absence of outside-blood is alone responsible for the degeneration in the offspring. Even the optimum of in-and-in-breeding, or its latitude, we can estimate in man mainly by the aid of ethnographical and statistical calculations in association with the laws of heredity; its definite determination is one of the problems of the future.

The practical aim of anti-consanguinists is strict legislation against consanguineous marriages, that of the consanguinists the abolition of the existing prohibitions (see above). If scientific investigation of the consequences of in-breeding is to influence public opinion one way or the other without bias or special motives, it is necessary to find for it a safe and broad foundation. For the present however we must say: *Non liquet*.

For the practitioner on the other hand it is much easier to arrive at a decision. As far as the problematical optimum of consanguineous marriages with regard to the inheritance of definite moral qualities, etc. is concerned he will prefer to leave it alone. But generally speaking it will be his duty to dissuade from the contraction of marriages by blood-relations. He will depart from this principle on very rare occasions only, even if the relatives intending to marry each other appear to be in a general sense absolutely free from any hereditary predisposition. For according to the laws of heredity the possibility is not precluded, as I have already said several times, that two similar predispositions which on account of their slight intensity were not recognisable in the parents individually may combine in the offspring and become so pronounced as to assume a definite pathological character; and this is moreover especially likely to be the case in consanguineous marriages.

But the practitioner will also do well to oppose marriages between people belonging to very distant races, as f. i. between Whites and Negroes. (See p. 27 in Prof. Gruber's article.)

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V

**Climate, Race and Nationality in Relation
to Marriage**

V

CLIMATE, RACE AND NATIONALITY IN
RELATION TO MARRIAGE

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PART I

Definition of acclimatisation.—By acclimatisation in general we understand the accommodation of any living being to all the imaginable influences of a locality foreign to it or to its nearest ascendants, and where the conditions of existence are different from those of its place of origin. This definition of acclimatisation applies both to animals and plants. As regards the acclimatisation of human beings it is also required that they should retain in a foreign country and under altered conditions of life their previous ability to live physically and mentally and to continue their activity without any detriment to their health and energy. Where a whole group of individuals of the same class is concerned, a further requirement is that the duration of life and the mortality among them and their offspring shall not be materially different from those prevalent among the natives, and that they retain as colonists the faculty to multiply themselves in the usual manner and to procreate a numerous and healthy offspring capable of resisting the vicissitudes of life without the introduction of fresh blood or a constant advent of European emigrants. The number of births must exceed that of the deaths.

These are the points of view from which scientists look at the subject. In reality, acclimatisation depends to a great extent also upon economic and political con-

ditions. Religious scruples also are often an unfavourable element in the settlement of emigrants, and similarly disadvantageous is the more or less comfortable mode of life to which they were accustomed in the old country. It is chiefly the women who find it very difficult to accommodate themselves to the new household arrangements and the new kind of domestic servants, and then there is the question as to the bringing up and the education of the children. With these subjects we are of course not concerned here.

It is necessary to point out that individuals as such may find it fairly easy to accommodate themselves to the new conditions but that it does not follow that a whole group of individuals may be equally successful. For this reason we have to distinguish between individual acclimatisation and class acclimatisation. It is chiefly the latter which shows us how the respective influences have been at work through a long series of generations whose end-representatives we see before us at the present day. Such race-acclimatisation is according to *Hirsch* identical with colonisation.

The French call the natural acclimatisation, that is the one which individuals undergo without any measures on their part, "acclimatement," and the substance of the measures which are taken for the purpose, principally the hygienic arrangements, "acclimatation." "Petit acclimatement" they call the individual acclimatisation, and "acclimatement de la race" that of a whole class or race.

The test of accomplished acclimatisation is therefore the physical thrift and the multiplication of immigrated colonists. When they succeed in living like the natives without any special aids, they are said to be naturalised.

Acclimatisation in the cold and temperate zones.—The acclimatisation of people going from the south to the north takes place easily. *Plinius* and *Vitruvius* already knew this: quæ a frigidis regionibus corpora traducuntur in calida, non possunt durare, sed dissolvuntur; quæ autem ex calidis locis subseptentrionum regiones frigidas, non modo non

laborant immutatione loci valetudinibus, sed etiam confirmantur. It is always easier to protect oneself against cold than against intense and persistent heat. The regulating apparatus is more adapted to deal with the former than with the latter; in addition, there are no endemic diseases to contend against.

Coloured individuals (Indians and Negroes) coming in ships right from the tropics into our winter bear the temporary cold very well and without injury. The negroes in the United States have shown themselves highly capable of acclimatisation under favourable social conditions. The prosperous population of Lower Canada is to the extent of about 85% of French descent.

Some authors maintain as a matter of course that inhabitants of the tropics as a rule accommodate themselves more easily to the temperate climates than vice-versa the inhabitants of the latter to the tropics.

Yet this cannot be said to be generally the case. A regiment of negroes stationed in 1817 in Gibraltar was almost totally destroyed by phthisis within 15 months. The wholesale settlement of negroes in the Antilles was also unsuccessful; the annual average population of the same in the years 1816-1832 was 696,171; of these 345,320 were males and 350,851 females; to 100 births there were however 111 deaths so that the black population was bound to diminish considerably in the course of time.

In any case there is in reality an immediate interchange possible between the populations of the tropics and those of the temperate or cold zones. The inhabitants of the tropics have hardly any desire to emigrate to regions where they would have more work to do and under worse climatic conditions. On the other hand the fertility of the tropics has since the time of their discovery ever been a source of great attraction to the civilised nations of Europe.

The examination into the possibility of acclimatisation on the part of a race or a nation is therefore limited in practice to the question of the acclimatisation of Europeans, as it is almost exclusively nations of that continent and belonging to

the "white" race that are striving to colonise the territories inhabited by weaker races or possessing sparse populations. The present day means of communication greatly facilitate rapid changes of domicile.

The climate of the tropics.—Travellers who make a temporary stay in the tropics experience there the same discomforts, but to a much greater extent, as are experienced in our latitudes during equally hot days. The enjoyment of the manifold beauties and of the luxuriance of nature is very much marred by the physical fatigue, by intense perspiration, by an easily supervening sense of lassitude and by the constant fear of succumbing to some more or less serious disease. One has always the feeling that it is not given to man to walk among palms with impunity. Immigrants who have to endure permanently the influences of the tropics undergo many changes, both physical and psychical, some of a general kind which affect the whole human organism, and others which are of a more individual character and dependent upon sex, material circumstances or occupation. At the beginning of their sojourn in the tropics, immigrants feel well and strong for a short time only; for soon they commence to look weak and pale, their physical capability diminishes and their previous enjoyment of life lessens considerably.

Injurious effects of the tropical climate.—The experiences of the British, French and Dutch governments with regard to their troops consisting of Europeans and natives prove by figures what was instinctively felt before by everyone, namely that the mortality of the European populations in tropical countries is considerably higher than at home, and also very much higher than that among the indigenous inhabitants.

The mortality among English soldiers was occasionally 4 times as great as that of the black troops; and it has even happened that the European troops perished almost to a man while the natives or the troops related to them remained almost entirely free from disease.

In France the mortality among the military during

the last few years has been 7.6 per thousand; whereas in Algiers and Tunis in 1883-1884 it was 11.6 per thousand, in Cochin-China in 1862, 91.8 per thousand and in Senegambia 526.9 per thousand.

The morbidity also is considerably higher in these tropical regions.

Of 1,000 persons in the British Navy in the year 1889 the following were attacked by disease:

In English Stations 75, in West-African Stations 122, In West-Indian Stations 104, in East-Indian Stations 158.

In the period of 1878-1882, there were on the daily sick-list in the Indian army, Europeans 56 per thousand and natives 44 per thousand.

The diminished resistibility against the influences of the climate is apparent not only in the immigrants alone but also in the next generation. According to the principles of heredity, such a rapid change and adaptation could hardly be expected; if an adaptation takes place at all it can only be achieved in the course of many generations.

The infantile mortality among the military population of India is very great; in 1870-80 it was about 70 per thousand against 22 per thousand in London. Major *Bagnold* was of the opinion that in spite of all attempts no regiment in India was able to bring up as many children as were required to replace the pipers and drummers.

Regulation of the body-heat in the tropics.—

The proper regulation of the temperature of the body is the first and most important demand made on the newly-arrived immigrant by the physiological process of acclimatisation.¹ The greater warmth and the greater humidity of the air, both of which combined are the principal factors in the climate of the

¹*Schellong*, Akklimatisation u. Tropenhygiene, *Weyl's Hdbch. d. Hygiene*, Bd. I. — *Scheube*, Tropenklimate u. Physiologie, *Eulenburg's Real-Encyclopadie*. — *Däubler*, Grundzüge der Tropenhygiene, 1900. — *Menze*, Tropische Gesundheitslehre u. Heilkunde, 1902. — *Rubner*, Lehrbuch der Hygiene, 1903.

tropics, produce an effect in the immigrated European. The latter has to adjust himself by means of the regulating apparatus contained in his organism to conditions to which the native is by nature accustomed.

As is well known, there are in the tropics permanently high temperatures which are further subject to daily exacerbations dependent on the position of the sun. The humidity of the air which is in Central Europe in the summer only 10 mm. is in Zanzibar 22.5 mm.; in Batavia 21 mm. at a mean annual temperature of 25.8° (Centigrade). According to *Wernich* the relative humidity at sea and on the coast of tropical countries is 80%. The seasons and the various situations (more or less remote from the equator, relative height above the level of the sea) have of course a somewhat modifying effect on the conditions just mentioned.

Holpert and *Rubner* have shown that in a relative humidity of 60-62% and at a mean temperature reaching occasionally a maximum of 25.7° C., it is quite possible for people to feel perfectly well and to perform hard work without any interruption in the evaporation of the perspiration. The climatic conditions of some altitudes in the tropics fall under this head, and in these localities immigrated Europeans can retain their former ability to work. Where there is a possibility of an undiminished elimination of water it is possible even in the desert of Sahara where the air is so dry for white men to perform long and wearisome journeys on foot, which they could not possibly accomplish without danger under the influence of such high humidity as is present in the low-lands or on the sea-coast of the tropics.

Comparison of Europeans with coloured races.—As regards the lowlands in the tropics we notice however that there are marked differences between the immigrated Europeans and the natives with reference to the regulation of the body-temperature. Light work causes very soon in the European considerable fatigue, while the negro or the Malay hardly experiences any discomfort; the coloured people eliminate easily during moderate labour a greater amount of heat into the surrounding air; at the same time their skins are almost dry,

while Europeans perspire very freely. *Eykman* has on the basis of ordinary and not by any means extreme circumstances established by figures certain facts relating to these existing differences. Thus he found f. i. that a moderately working Malay excretes through the urine and the fæces 738 grammes of water, and through the perspiration 1,577 grammes; whereas an European under similar circumstances excretes 1338 and 1730 grammes respectively. The former eliminates therefore 2315 grammes of water, and the latter 3068 grammes.¹

It should also be mentioned here that coloured races drink very little and that they secrete much less urine than Europeans, who endeavour to compensate by copious drinking the great loss of water they suffer through profuse sweating. In any case there is a great difference noticeable between them as to the excretion of water for the purpose of regulating the temperature of the body.

It is as yet a much debated question how and to what extent coloured people effect the elimination of their watery secretion. It is not impossible that they excrete by the lungs greater quantities of water than Europeans. The lung-capacity of the Malay is greater in proportion to their stature, and it has also been noticed that they exhibit an increased respiratory frequency. The commencement of the respiratory passages in the negro is more voluminous so that he can breathe more freely. An increased respiration might therefore enhance the elimination of watery vapour.

It is clear that the skin of coloured races acts differently in respect to radiation of heat and secretion of sweat than does that of white people. During a time-unit a coloured man doing a moderate amount of work eliminates more cutaneous heat into the surrounding air, whereas the white man appears to retain the heat much longer in his skin.

Glogner found that one square centimeter of Malay skin discharges in $\frac{1}{2}$ hour 10.5 heat-units, and the same surface of European skin only 8.7. There is, besides, a

¹ 1 Kilogr. of water forms in the evaporation 572 large calories.

small difference in the body temperature, which is 37.20° C. in the Malay, and 37.33° C. in the European.

European immigrants also show considerable individual differences in the elimination of heat, which is not the case in the Malay. *Eykman* estimates the average difference in the elimination of heat through radiation and conduction between Malays and Europeans as 4.7% in favour of the Malays. The same thing may be said with regard to negroes; the heat proceeding from the dry skin of a negro is perceptible from some little distance.

Anatomical peculiarities which might explain the different behaviour of the skin in whites and in coloured people have not been found. Neither the observations of *Henle* and *Krause* that the skins of negroes are thicker than those of the Caucasian race, the cutis in general varying by about 1 mm. and the epidermis in some places by nearly as much, nor those of *Däubler* to the effect that coloured skins have larger sweat-glands and sebaceous glands of double the size of those in white skins, are of any practical importance.

In contrast with coloured people who are by nature endowed with special means to regulate their temperature in accordance with tropical conditions, the whites are dependent exclusively upon the increased secretion of perspiration. It is true that the organism has at its disposal regulating aids which act independently and by way of the nervous system. When the body-temperature is higher the capability of the muscular system diminishes, and the amount of body-heat generated decreases, but with it decreases also the ability to work. If under circumstances however these functions do not co-operate properly or at the proper time, there occurs a congestion of heat which manifests itself by insolation or other pathological conditions. By an increase of respiration the elimination of vapour is somewhat assisted, but neither by this means nor by the relaxation in the cutaneous capillaries is much heat given off.

New-comers perspire very freely after the slightest exertion; after many years the skin becomes accustomed to the altered conditions and the perspiration is less profuse.

Nutrition in the tropics.—There is a wide-spread belief that the amount of nourishment required differs materially in different climates, and that particularly in the tropics far less suffices to sustain life. Recent research has shown this opinion to be wrong, and that the difference is only a very slight one.¹

Under the influence of occasional high temperatures, the appetite of an European diminishes for the time being; where the temperature is perpetually high the appetite may also be permanently affected. New immigrants lose their appetite after a very short stay in hot places, and their nutritive requirements adapt themselves only gradually. It is impossible to state a definite temperature at which this anomaly occurs, as it varies in different individuals.²

Requirement of water in the tropics.—The quantity of water eliminated principally by the urine, the perspiration and evaporation is replaced by drinking. The thirst is however as we know from experience even in the temperate climate of Europe, increased by drinking and the tendency is to drink more cold water than is necessary. Natives prefer warm drinks such as coffee and tea as these quench the thirst in smaller quantities and do not produce the evil results of large quantities of water such as profuse sweating which irritates the skin and wets underlinen and clothes, a depressing effect on the stomach and intestines, and an increased chance to catch cold. The blood-pressure becomes greater, the cutaneous capillaries are more injected, and the pleasing sensation experienced during the act of drinking is succeeded by a general unpleasant feeling of discomfort. If as it frequently happens alcohol in some more or less concentrated form is taken instead of plain water, and the opportunities for doing so are not absent, the combined effects of the double injury soon become apparent. It is a plausible saying that one should quench his thirst in the tropics not by glassfuls but by spoonfuls.

¹*Voit*, Nahrung in den verschiedenen Klimaten, Arch. f. Anthrol. Bd. XXIII.

²*W. E. Ranke*, Einwirkung d. Tropenklimas auf die Ernährung d. Menschen. 1900.

Other physiological and pathological processes in tropical acclimatisation.—We have already seen that one of the consequences of the equilibration of the body-heat is an increase in the respiratory frequency. In newcomers it amounts to 20 or more respirations per minute; in those who have become acclimatised by a longer stay the number falls and is about 16-20.

According to *Plehn* the pulse is at first quickened by about 6 beats, after a time it is in the European, like in the native, about 68-78 per minute. In other respects there is no change observed.

The same author has found that the body temperature is in new-comers on an average 0.46 degree (C.) higher, and that it may go up by as much as 2 degrees. After acclimatisation there is no increase and the temperature fluctuates according to seasons between 0.18-0.4°.

As regards the vascular system there is a tendency to congestion in internal organs particularly after dietetic errors and especially after the consumption of alcohol, also after severe exertion.

The heart is in consequence of these various processes severely affected either primarily or secondarily. There is hardly an European who does not when visiting the tropics suffer from an irritability of this organ. In those acclimatised the heart and the blood-vessels adapt themselves to the changed conditions, so that nothing abnormal can be detected. Though this happens frequently, one meets on the other hand many Europeans in the tropics whose hearts are functionally weak or exhibit irregularities, such as light dilatation; occasionally functional murmurs are heard which appear especially after exertion.

The liver especially is in the tropics an organ to which during congestion the circulation looks for an outlet. The liver, both in immigrants and natives, contains more blood than in temperate climates. Immediately after arrival in the tropics the liver begins to grow in volume, perhaps in consequence of the larger quantity of fluids consumed; but this enlargement, which is often insignificant only, remains permanent without causing any sort of trouble. This enlargement of the liver was formerly

a subject of fabulous importance with regard to acclimatisation in the tropics. It was supposed to be productive of larger quantities of bile, which is not a fact; it was suspected that on account of the enlargement of the liver in the tropics the pulmonary capacity is diminished, (a condition which has not been proved) and that the liver acts therefore as a sort of vicarious organ, being accordingly styled "the lung" of hot climates. From a pathological point of view the liver in the tropics certainly demands the frequent attention of the medical man, seeing that disturbances take place in this organ which are caused by alcohol, malarial infection, dysentery, various micro-organisms, animal parasites, etc. so that these disturbances must be attributed less to the climate than to an unhygienic mode of life or to a pathogenic infection.

The secretion of urine in the tropics is diminished in consequence of the increased elimination of water through other channels. For this reason it is also not possible to give figures with regard to the daily secretion of urine. When perspiration is very profuse, about 700 ccm. of urine, or even less are discharged daily; otherwise about 1 litre is the usual quantity. As the amount of urine diminishes, so does its specific gravity go up, and the latter fluctuates between 1018-1024. The quantity and specific gravity of the urine and sweat depend of course on the amount of fluid consumed.

Urinary substances are eliminated both by the urine and the perspiration. The quantity of the products secreted as a result of metabolism is about the same in the tropics as in temperate countries. Some statements that less nitrogen is eliminated through the urine may be explained by the neglect to take into account the quantity eliminated through the perspiration. According to *Eykman* after light work about 12.8 grammes of nitrogen are on an average daily eliminated through the urine, and 0.76-1.36 gr. through the skin. The acclimatised European discharges therefore quantitatively hardly any less nitrogen than the inhabitants of temperate climates, only he discharges it in a different manner.

Both voluntary and involuntary muscles are affected by the relaxing and debilitating influence of the tropical climate. This

is seen in the lesser working ability of Europeans compared to the natives, and may be demonstrated by means of the dynamometer.

The opinion already expressed by *Lavoisier* that the excretion of carbonic acid is diminished in hot countries has recently been experimentally proved by *Rubner* to be correct.

As regards the consumption of oxygen the views hitherto existing on the basis of theoretical calculations have turned out to be erroneous. Owing to the higher temperature, both air and gases are expanded; a definite volume of air contains therefore less oxygen than in cooler regions. The higher percentage of vapour contained in the tropical atmosphere also contributes to a further quantitative reduction of oxygen. It was consequently assumed that the consumption of oxygen in hot countries is diminished and an attempt was made to find the cause of tropical anæmia in the reduced quantity of oxygen contained in the inspired air. It was however overlooked that the inspired air, no matter how constituted, is in all climates warmed first in the respiratory passages to about the same degree (that is 35° C.) and well mixed with vapour. The amount of oxygen which can still be taken up in accordance with physical laws is sufficiently present in the air of the tropics. Moreover examinations of the blood have shown that the number of red and white corpuscles, and the quantity of hæmoglobin are by no means always diminished in the tropics. The anæmia is not necessarily a result of the stay in the tropics; if it is seen frequently, there may be pathological and other reasons, physical, nervous and moral present.

One meets in hot countries very often people with a pronounced grey-yellowish and sallow complexion, and healthy-looking immigrants acquire in the course of time such an appearance. The condition has been given the special name of tropical anæmia, but examinations of the blood have revealed no definite changes in the normal elements of the hæmoglobin, in the specific gravity, or in the amount of water contained in the blood (*Marestang, Eykman, Glogner, Plehn*) provided of course there was no real anæmia in consequence of malaria, chronic diarrhœa, dysentery, ankylostomiasis or some other

cause. Tropical anæmia is now regarded as a normal condition of the skin, the pigmentation of which is influenced by the altered conditions in the circulation, secretion and illumination. Owing to the antagonistic hyperæmia in the abdominal organs (*Stokvis, v. d. Scheer*) the cutaneous capillaries are less injected, the upper cellular layers of the skin are on account of the increased activity of this organ added to and saturated with moisture; the horny layer of the epidermis swells and obstructs the transparency of the redness of the capillaries which would give the skin a rosy appearance in temperate climates. Besides, the inhabitants of the tropics and particularly the women avoid as a rule with a kind of fear the direct influence of the sun.

The nervous system is during the transition period, and also during the stay in hot countries severely affected through the physiological processes discussed above, even where they occasion no disturbances. Almost always and with rare exceptions there appear signs of a more or less well-marked neurasthenia and in connection with it distressing insomnia, susceptibility to mental impressions, nervous irritability, finally apathy, moral depression, defects of memory, and similar consequences. Every mental exertion requires in the tropics a special amount of energy different in a subjective degree. The advance in the civilisation of China, Japan, India, Australia, and South America shows that a certain amount of mental productiveness is possible in hot countries, but such progress as has been achieved by communities in temperate climates can hardly be expected from the tropics; and it is very unlikely that they will ever supply humanity with original and profound thinkers or investigators.

The increased irritability manifests itself also in the sexual life. The desire in both sexes is increased, and the fruitfulness of the man greater. Altogether the conditions of life and the daily events are greatly under the influence of sexual excitement both in a good and a bad sense. There seems to be no theoretical reason why morality should suffer, but as a matter of fact there is a great deal of transgression under the tropical sun committed against connubial and non-connubial conditions. With regard to Africa specially a condition has been created under the name of "tropical frenzy," but the probability is that individuals

unable to control themselves when away from the watchful eye of the law and of society would lose their equilibrium even at the North Pole.

The digestive organs also exhibit manifold deviations. The digestive juices are more fluid and consequently less effective; the muscular coats of the stomach and intestines become more lax. Numerous micro-organisms which thrive abundantly in the moist tropical climate are introduced into the digestive tract along with the solid and liquid ingesta. Atonic gastric complaints and hypochlorhydria are frequently observed. The digestion of proteids is often interfered with; and a diminished desire for animal food manifests itself. Intestinal catarrhs and constipation are frequent complaints resulting from atony of the bowels or from an increased loss of water through perspiration.

Digestive disturbances, anæmia, and neuroses influence each other reciprocally in the tropics in the same way as they do in temperate climates.

The statements that a slight hypertrophy of the left ventricle occurs constantly in consequence of the increased cardiac activity, diminished secretion of urine and greater arterial pressure (*Martin*), and that an acclimatisation-atrophy of the kidneys, especially of the cortical substance, is caused by the diminished urinary secretion, have received no confirmation.

Finally it is worth mentioning that the skin becomes in the tropics much more sensitive, and that it is affected by even insignificant changes in the temperature. Diseases caused by cold and especially rheumatism in different forms and degrees of severity threaten every inhabitant of the tropics.

Mass acclimatisation.—In looking back at the most important changes mentioned above which the organism of the immigrant has to undergo under the influence of the tropical climate we see that a considerable demand is made upon the physiological capability of each individual. If such individuals succeed singly in accommodating themselves it does not follow, as I have already said that a large number of colonists coming from a similar stock would be equally successful in settling in the tropics and there founding families and generations. In the course of the physiological process of acclimatisation there are

numerous transitions to pathological conditions, and whereas travellers and scientists formerly believed that the acclimatisation of white races in the tropics is impossible, or at least possible in the case of certain European nations only, among which the Germans were certainly not included, this opinion has during the last two decades undergone considerable modification. It is important that this modified view is shared by doctors, naturalists, and officials who speak from personal experience which they obtained in the tropics.¹ The prospects that Europeans can settle fully and completely in hot climates have improved materially; but whether they will be able to accomplish all physical labour equally with the natives is a question which the future only can decide.

Favourable predisposition.—There are elements favoured by nature which have apparently no inclination to be attacked by endemic diseases, and especially by malaria, and which if attacked can overcome the maladies without any serious consequences. Such are youthful, healthy and vigorous elements not hereditarily predisposed to disease. For the Germanic race it appears that the most suitable age for acclimatisation is that between 23 and 40; for the Roman race the individual suitability begins much earlier, namely at 16. Those who have previously trained their bodies by gymnastics or other physical exercise are generally speaking better adapted. Infants die easily from the consequences of dentition or digestive disturbances; too young people are not sufficiently hardened against the unaccustomed fatigues and the new conditions of an altered mode of life; they soon become anæmic and fall a prey principally to malaria; older people are no longer sufficiently elastic.

Predisposition of females.—It cannot be denied that European women are on the whole more susceptible to the climatic influence of the tropics than the men. Those whose bodies have become hardened through work and physical activity are in a more favourable position. The case is however different in those women who emigrate as daughters or wives along with their fathers or husbands without any regard to

¹Wulffert, Akklimat. d. Europ. u. insbes. d. german. Rasse in d. Tropen, u. ihre haupt. Hindernisse v. Volkmann's Samml. klin. Vorträge. No. 270.

their physical fitness. Under the influence of the climate and among unaccustomed surroundings they soon become anæmic and nervous; uncommonly frequent are menstrual disturbances. Older opinions were to the effect that all European women living in the tropics suffer from leucorrhœa; and though this may not be quite true, the malady is in any case exceedingly prevalent. It is found that females do not suffer so much from malaria, but this is probably due to their more domestic employment.

Sexual life and marriage of Europeans.—

These women show themselves unequal to the demands of married life; they easily miscarry. Young mothers as a rule lose their milk. Further, endometritic diseases are very prevalent and they lead to all kinds of uterine disturbances, to amenorrhœa, menorrhagias and sterility. In addition, the general condition of the women deteriorates, they become emaciated, the nervous life and the regulated psychical state are disturbed, and the married life of Europeans is therefore often a sad one. Whilst the sexual requirements of the husband are in the tropics greater the resistibility of the wife diminishes. But although these distressing conditions are very frequent, especially in the case of young women who have come to the tropics direct from well-regulated European surroundings to find in the place of the expected bliss serious disappointments, there are nevertheless females who accommodate themselves perfectly to married life as wives and mothers.

It has formerly been asserted that the fruitfulness of Europeans in the tropics diminishes and that it does not go beyond the fourth generation. I will deal later more fully with this assertion; for the present I wish to observe that owing to the chronic indisposition of the European women the men are often induced to have recourse to healthy natives. Hence the acclimatisation of the European race is often frustrated on the one hand by the sexual incapacity of the women, and on the other it gives rise to various mixed races.

The main reason however why a continuation over several generations of descendants of an unmixed European race is so rare in the tropics lies undoubtedly in social conditions. The

formation of a household is to the immigrant an encumbrance, and an impediment which prevents free movements. Many a married European finds difficulties in educating his children; he therefore sends his family to Europe or returns there himself. Others do not feel the want of European family life and prefer a native woman; no longer accustomed to the restraint necessitated by intercourse with civilised women, they find an efficient substitute in the free mode of living with natives to whom they need pay no consideration. The offspring mix with the native children from among whom they naturally select their sexual companions.

Tropical climate at the coast, in the interior, on islands and on the mountains.—The consideration of the peculiarities of the tropical climate must take place from various points of view. Most emigrants going out independently proceed to places on the coast, where the hygienic conditions are none of the best and in addition to the high temperature the atmosphere is very moist. The insular climate in the tropics is similarly constituted and its effect is equally depressing.

Different however from this moist-hot climate which acts as an obstacle against acclimatisation, is from the practical standpoint the more favourable dry climate of the interior; there the relative humidity in the dry and wet seasons varies considerably, but is not permanently as great as on the coast.

The most favourable climate is that of the mountainous regions. The higher the zone the more it approaches the European climate. *Jacob Lind*, as early as 1770, called attention to the difference in the climates of the highlands, islands and valleys of tropical countries, and shewed how differently they affect the health. But only recently attempts have been made to take advantage of this fact by settling colonists in high localities or by utilising to the greatest possible extent for dwelling places elevated districts in the neighbourhood of the coast-towns.

But though there are no endemic diseases, such as malaria, yellow fever, dysentery, etc. present in elevated districts, and the feeling of comfort is greater, there are nevertheless com-

plaints among the Europeans, such as anæmia, sterility of the women, great loss of child-life; they also manifest an inclination to inflammatory and catarrhal diseases.

Hygiene in the tropics.—The possibility of acclimatisation on the part of single individuals as well as entire colonies owes a great deal to the progress which the hygiene of the tropics has made in the last two decades. Whereas formerly everything was done empirically it is now recognised that a definite system must be followed how and where hygiene is to interfere. Special and rational rules have been adopted with regard to agriculture, irrigation, housing arrangements, etc.; suitable principles are acted upon as to clothing, nutrition, recreation, physical culture in the healthy and unhealthy condition, and though much remains yet to be done, much has already been accomplished. *Hüppe*¹ is right in saying: "The main difficulty of acclimatisation in the tropics no longer lies in the question of adaptability, but in the question of personal and public hygiene. The problem of the acclimatisation of Europeans in the tropics has been replaced by the problem of the hygiene of Europeans in the tropics."

Consumption of alcohol.—A few words with regard to the injurious influence of alcohol may be indicated here. *Emin Pasha*, doubtless an authority on questions connected with the tropics, said: "Those who avoid all excesses, and especially the abuse of alcoholic liquor, can afford to laugh at the fairy-tales on the dangers of the tropical climate." He thinks that Europeans suffer from it so much just because they cannot keep off intoxicating liquors. All experiences agree upon the injuriousness of an excess of alcohol, no matter in what form indulged in, upon the physical as well as the moral condition; it is indeed an obstacle against acclimatisation if not a downright cause of diseases which tend to shorten life. *Wulffert* sees the principal dangers of alcoholic abuse in its effects upon the digestive, nervous and vascular systems, in the disturbance of the physical regulation of the body-temperature, and the diminished resistibility of the body against disease-producing micro-organisms.

¹Berl. Klin. Woch. 1901.

Whites who are given to the drinking-habit will never become acclimatised in tropical conditions. *Fiebig*¹ gives examples from the Dutch-Indian army, especially during the campaign against Atjeh in 1898, showing that European abstainers in the tropics proved more fit than the natives.

Acclimatisation of races.—In a lecture on acclimatisation *Virchow* said: "In medical circles no one has ever imagined anything else but that such an adaptation is connected with material alteration of the organism, that it is not therefore a question of a mere change of outer costume, but of an internal transformation creating to some extent entirely new organic conditions. In the course of time an habituation takes place whereby the number of diseases and deaths occasioned by the climatic conditions undergoes diminution." In another place *Virchow*² said: "There is an acclimatisation but a limited one. Certain races are more adapted for acclimatisation and others less so." The latter he called *vulnerable* and these are absolutely unsuitable for the colonisation of tropical regions. On the other hand *Weissmann* maintained that the favourable individual variations present in a colony persist and are propagated and that they can transmit their favourable qualities to their offspring. Thus racial acclimatisation is accomplished. The less resistible succumb, the more resistible endure and transmit their greater resistibility to their descendants. It is therefore a question of "natural selection," and the query arises: Is racial acclimatisation accomplished by favoured individuals of a particular race or by favoured individuals of any one race, in other words, are there with regard to acclimatisation, privileged races?

Among Mongolian nations the Chinese have endeavoured to form independent colonies and have succeeded in spreading themselves over the Asiatic and Australian continents as well as Polynesia. On account of the different climates of their country which stretches from the Siberian border to beyond the tropics

¹Archiv. für Schiffs- u. Tropenhygiene. 1901.

²LVIII. Deutsche Naturforscherversammlung.

³Arch. f. path. Anat. Vol. 103. Descendenz u. Pathologie.

they have in the course of time acquired a certain resistibility. They have shown themselves superior to the white colonists because they have easily assimilated with the native races of all countries where they settled and formed numerous mixed products.

The coloured races have as a rule been transplanted against their will and consequently become acclimatised under unfavourable circumstances, in a state of subjugation, without the help of hygienic precautions, perhaps because the movements always took place towards tropical and sub-tropical regions with a climate resembling that of their original home. An acclimatisation of mid-African negroes in the coast-lands of North Africa, in Egypt, Tunis, Tripoli, Morocco, Algeria has never been possible, and similarly the transportation of negroes to Ceylon, Mauritius, the West-Indies, Mexico, and other such places whose climate ought to have suited them, has also proved futile; it is of course possible that the miserable treatment which they received is accountable for these failures.

What climatic differences may come into question with regard to acclimatisation is seen in the horse, which is not adapted to the damp and warm climate of the tropics, but which thrives in hot and dry countries, such as Arabia, North Africa, Australia, etc.

In the tropical parts of South America, in the Antilles, and in the south of the United States the negro race prospers, thrives and is reproductive; it has even penetrated farther north and also changed its physiognomy, the cheek-bones are less prominent, the lips not quite so thick and the nose less flat, the woolly hair is not so profuse and the angle of the face not so acute as in the African negro (*Bastian*).

Wherever the negro race appeared it mixed willingly or unwillingly with people of their own kind or with those of other races, as is seen by the numerous half-breeds in existence. In respect to physiological functions and mode of life, as well as in the manner of geographical distribution, the Arabs approximate very much the negro type.

Special examples of pure racial acclimatisation we find in the Jews and the gypsies who have that in common between them

that they generally try to pair with individuals of their own race. The former, of Semitic and especially of Syrian-Arabian descent, and the latter of Aryan origin, are on account of their migrations and their historically well-known resistibility considered as true types of cosmopolitans. The Jews have a certain homogeneity with the Arabs, Moors, and the old Phœnicians, and have gradually advanced towards the Mediterranean Sea ever since they became dispersed after the destruction of the Syrian empires. They subsequently spread further North and West into colder regions where they became acclimatised; this acclimatisation is however one of a lighter kind and not greater, according to *Bertillon*, than that of all Aryan nations.

In speaking of the great adaptability of the Jews, one is really bound to think more of their accommodation to the political and social circumstances of the countries in which they have settled. A physical acclimatisation to bodily exertions such as are required f. i. by agricultural pursuits, they had no need to undergo seeing that circumstances necessitated their adoption of other vocations; nor have the Jews either formerly or recently attempted to settle in large numbers as colonists in tropical countries. Sporadic Jewish emigrants have not formed there any Jewish families worth speaking of, as either they or their descendants have departed from the tradition of the Jewish race and intermixed with natives of their adopted countries.

The principal European emigrants who have shown themselves particularly suitable for acclimatisation in tropical regions were the South European nations, the Spaniards, Portuguese, Maltese, Italians and Levantines. They dwell in the countries round the Mediterranean, which, to begin with, possess an average temperature by $14-18^{\circ}$ (C.); theirs is the great historical high-way which migratory nations have traversed from time immemorial, perhaps from the days of pre-historic man. The Iberian nations are a mixture of various acclimatisable elements which stand in relationship with the Semitic races of the Arabs and Phœnicians. The other nations

named above are also to a great extent mixed products; they all have a dark complexion which is suitable for the tropics. The Italians have settled in the countries near the Red Sea, and in North and South America; the Portuguese in tropical Africa, in Southern India and in Brazil; the Spaniards in the West-Indies, in Mexico, on the large South American continent, in Peru, Chili and the Argentine republic. The white Spanish population of Cuba which amounted in 1775 to 96,440 individuals grew so that in 1861 it consisted of 793,484 inhabitants, though it must be admitted that a large part of the addition is due to new immigrants and race-mixture. But the emigrants of these South European nations have not remained pure, they have mixed with the natives to a large extent, so that the populations which claim to-day to be legitimate Cubans, Mexicans, Venezuelans, Brazilians, Chilians, Peruvians, etc. are in reality mixed products of Spanish and Portuguese descent.

The two principal maritime nations of Germanic blood, the English and the Dutch have become firmly established in tropical India and the Sunda Islands, but they have treated these regions more from the point of view of productive colonies than as an oversea outlet for their European over-populations. Many Englishmen and Dutchmen have emigrated to the colonial possessions of their respective countries, but have only exceptionally founded there permanent families; as a rule they remained either alone or with their families for some more or less prolonged period after which they returned to Europe.

In the French colonies situated in the tropics there have also been no permanent populations formed which are of pure French blood. The emigrants have either intermixed with other races and nations or returned home. It is therefore impossible with respect to the French also to say definitely whether they possess on the whole an adaptability for acclimatisation in the tropics.

Since the year 1830 the colonisation of Algeria has been attempted, at first with unfavourable results, but more successfully during the last few decades. According to *Bertillon* the circumstances in Algeria during 1855-1856 were as follows:

	Births	Deaths	Difference in births
Spaniards	46	30	+16
Maltese	44	30	+14
Italians	59	48	+11
French	41	43	— 2
Germans	31	56	—25

It would therefore appear that the Spaniards and Italians were in the most favourable position, and that these two nations are capable of permanent colonisation without the necessity of bringing fresh elements from the mother-country. The French showed if no great mortality at least a very limited number of births, and the Germans a high mortality. The conditions have in spite of improvements remained practically the same at the present day; the purely French element, particularly that part of it coming from the South of France has become acclimatised. Those who thrive best in Algeria to-day are Frenchmen from the South of France, Spaniards, Italians, and above all, Jews; among the latter there were in the last decade 55 births to about 28 deaths. The German colony (Alsace-Lorrainers) is as before still in a bad way; it shows the largest mortality, formerly 55 and now 39 deaths per 1000 inhabitants, against 32 births.

The Germans have up to recently had no proper opportunity of showing whether they possess as a race any fitness for acclimatisation in tropical countries. An early attempt in Brazil has proved futile, since when D. Pedro in 1831 abdicated the Brazilian throne, two battalions of German troops were compensated after their disbandment by a grant of large tracts of country between Pernambuco and Utinas. In spite of all possible assistance from the Brazilian government the whole number of them died within one year from the effects of the injurious emanations from the soil to which they were subjected as agriculturists. (*Helff.*)

Mixture of races.—We see that wherever colonising enterprises on the part of white people have taken place, numer-

ous mixtures with the natives or other coloured races have been the results. Neither in East-India, nor in the West-Indies, nor in Cuba, Porto Rico or Brazil, have the families of the original European settlers remained unmixed beyond the third or fourth generation. But the greatest vitality has been exhibited by the numerous cross-products resulting in the tropics from the mixture between Northern immigrants and native women. The English who have intermixed with the latter less than others have therefore obtained the least success as colonisers, though their commercial relations would seem to point them out as the most suitable for the purpose.

Many endeavours have been made to find out whether there are, after all, any cases in the tropics, of European tribes which have remained pure through several generations. Statistics are unfortunately not available as they are either absent altogether or utterly unreliable. We are dependent entirely on individual traditions and moreover great mistakes are apt to occur when considering whether a racial acclimatisation has taken place. The European mixed-breeds regard themselves according to the demands of political or social necessities sometimes as natives and sometimes as foreigners. In India cross-breeds are frequently called Europeans. Travellers who have reported on the subject have for these reasons frequently been misled into wrong calculations.

It is reported that in Reunion a French colony exists under the name of "Petit-Blancs" whose ancestors immigrated after the occupation of the island under Louis XIV, about 1650, and who have reproduced themselves without intermixture. Individually they have become quite acclimatised, they pursue hunting and agriculture, are rustic inhabitants, and though poor they are bodily in the best condition. The town-dwellers, on the other hand, who are descendants of the well-to-do portion of later French emigrants show a high mortality.—*Rousselet* found in 1867 in Central India (Bhopal) in the heart of the Windhya mountains a

small tribe of European descent which may be traced to a French immigration that took place in 1557, and which has retained the European character of the colony by avoiding inter-mixture with other than European nations, especially Portuguese.

The Spanish tobacco-peasants in Cuba are said to have prospered so markedly that their number of 95,440 in 1774 went up to 793,884 in 1861, and that their mortality was lower than that of the mother-country.

There are said to be six families in Peru which have kept themselves pure for 200 years.

Stokvis particularly has taken great pains in establishing the pedigrees of pure European families in the tropics, and gives a few examples from Surinam. Captain *Schultze* has given a minute description of the genealogical tree of a Dutch family in Java recording its history for more than 100 years.

Stokvis mentions also the population of the very small island of Kicser in the Malay Archipelago which includes European inhabitants who claim descent from Dutch soldiers that had remained there 150 years ago after the destruction of the fortress and married European women. But as Kicser is frequently visited by sailing vessels the crews of which generally stay there for some time, it is doubtful whether the inhabitants have not occasionally received an addition of fresh blood. (*Däubler*.)

A careful examination of family registers for which absolute purity was claimed has in the cases where such an examination was possible proved that intermixture with foreign blood has taken place or that such blood was introduced by some lateral chain that could not be followed up.

The Spanish and Portuguese immigrants to the tropical countries of the West-Indies, Cuba, Ecuador, Brazil, and Mexico whose families have become the present-day inhabitants and are proud that their blood is of the purest possible, cannot, judging from the ordinary course of circumstances be looked upon otherwise than that intermixture has played a part

in their family histories. The Iberian nations have always shown an inclination to mix their blood with that of the nations among whom they dwelt. Even in their physiognomy these people have changed so much that they do not in the least resemble any longer their European ancestors. Spaniards and Portuguese have in spite of the great resistibility which they are said to possess against tropical influences remained only relatively pure in Porto Rico; they avoid every kind of fatiguing work. The older white population has almost entirely mixed with Arab, Indian and Negro blood as well as that of Mestees.

Whether pure racial propagation in the tropics is at all possible cannot under present circumstances be said. A European colonisation which has remained incontestably pure through several generations without any admixture from outside has never been undertaken systematically; it is therefore impossible to say whether such an experiment could or would succeed. Natural conditions seem to show that accommodation takes place differently. *Stokvis* thinks that not only is an European acclimatisation possible, but also complete colonisation. The latter however never takes place in reality in a pure form. Even the Boers to whom he refers and who are regarded as suitable for the tropics are fond of staying in the tropical highlands and frequently return to the Transvaal.

The successful colonisation in the South and West of Africa by the English and Dutch, in the Argentines and in Chili etc. by Spaniards, in the Southern States of Brazil (Santa Catharina, Rio Grande) on the Rio de la Plata estuary, and in Queensland by Germans, does not come here into consideration, for these are places situated in the temperate zone the climate of which resembles that of the respective European home-countries and which present in some respects considerable advantages.

The pairing of the Europeans settled in the tropics with native women is a necessary means of naturalisation, if it is only for the reason that white women decline and grow old far too soon. But there are European women accustomed to the tropics from whose union with natives a strong progeny has

resulted. The propagation of the white race is dependent on an addition of foreign blood, even if it emanates from coloured or mixed races; thus the offspring of Europeans in the tropics retain their vitality and acquire finally definite types.

Pairing with native races is particularly beneficial in facilitating the acclimatisation of the white race. By such means qualities are formed which render the sojourn of Europeans in foreign climes endurable. "In this way the race changes to a severer extent than by Darwin's 'Selection' or other influences" (*Virchow*).

Endemic diseases.—It is finally necessary to mention the endemic diseases which influence the process of acclimatisation to an enormous extent, and which form the principal factors upon the basis of which the question of the possibility of complete European adaptation in the tropics has been judged. Although such a possibility has been admitted by some with regard to a physiological accommodation to the climate, the greatest doubts have arisen as to whether it is possible to overcome the pathological conditions, and even if such a successful result could be obtained in the case of single individuals it can hardly be expected in an entire colony or in a large number of people. Some observers, in fact, relying upon existing data have absolutely denied the possibility of adaptation to the pathological difficulties of the climate.

As an illustration we give here the following figures relating to the military population of the Dutch Indies consisting of 12,974 Europeans and 15,521 natives, for the year 1874 (according to *Uffelmann*):

	Per 1000 Diseased	Europeans Dead	Per 1000 Diseased	Natives Dead
Malaria	747.9	15.0	362.3	3.6
Dysentery	106.8	23.1	24.8	3.8
Cholera	62.7	32.5	23.5	8.3
Hepatitis	21.7	1.15	1.7	0.38
Enteric fever	10.0	0.38	0.51	0.33
Beri-beri	2.2	0.38	35.4	1.35

In Finschhafen (German New Guinea) there were

according to *Schellong* in 1886-1888 no less than 99% of the Europeans living there suffering from malaria; about 50% of all Europeans and Malays were ill with malaria every month, and those who had to stay for 16 months were faced with the prospect of having malaria 6 times. The mortality of Europeans from malaria was 90 per thousand, that of the Malays 0.

As we shall see from the following remarks considerable progress has been made in these respects during the last two decades. This applies especially to malaria which has always been one of the principal factors in connection with acclimatisation.

Malaria.—From the earliest times of historical medicine malaria has been known and always associated with the influence of the soil.¹ The necessity of establishing human habitations in the neighbourhood of water supplies, either the sea or rivers, brought with it the constant struggle against malaria, the cause of which was up to a few years ago supposed to lie in a miasma emanating from the soil.

As a result of the ubiquity of malaria just in those tropical regions which are the first goal of colonists, the opinion became universal that the ability of Europeans to become acclimatised in the tropics is synonymous with their ability to become acclimatised against malaria, and that the process of adaptation is completed when the persons otherwise acclimatised are capable of cultivating by themselves the ground which nourishes them. The dangers of malaria do not lie only in the injury to health or in the frequent relapses which lead to severe anæmias and cachectic conditions often ending with death, but also in the circumstance that two of the most frequent consequences of the disease are sterility in females and an enormous infantile mortality. For these reasons the foundation and growth of families are so difficult.

The only remedy to counteract the evil influences of malaria

¹) S. Reinhold Ruge's *Bearbeitung der Malaria im Handbuch der pathogenen Mikroorganismen von Kolle und Wassermann*, Bd. I.

English Translation by Eden Paul, M.D. (Rebman Company, New York and London.)

is supposed to lie in the cultivation of the soil and especially in its drainage, but this can only be accomplished by sacrifices, personal risk or the hands of coloured labourers, Negroes or Malays, who are known to possess a certain immunity against the disease. But as it is hardly possible to anticipate that the tropics will in this respect become so changed as to present no dangers to Europeans arriving there, former observers have all expressed the opinion that an acclimatisation against malaria does not exist and never will. *Virchow* pointed out that the sanitary measures adopted in the Roman Campagna, though carried out under circumstances vastly superior to those in the tropics, were nevertheless failures. But what a change has taken place since! In that fever-stricken locality Ostia, one of the worst of its kind in the Campagna where no one ever ventured to remain for a few hours after dark three English investigators, *Sambon*, *Low* and *Rees* have in 1900 spent several months without being attacked by malaria either at the time or subsequently, thus proving the correctness of the modern view and the reliability of the prophylactic measures resulting from it.

By the very important researches of *Laveran*, *Golgi*, *Ross*, *Koch*, and many others, the malarial parasites and their developmental phases as well as the part played by the mosquito have been established in a most convincing manner. The malaria-mosquito theory explains clearly the relations between the disease on the one hand and age, sex, employment and race on the other, whereas formerly everything was mixed up in the idea of acclimatisation.

Children and young persons to the age of about 35 form the majority of sufferers from malaria; the first years of child-life show the greatest predisposition to it. Sex does not appear to play any important part, and if women are generally less liable to attack it is because their domestic duties prevent them from being out in the open as much as men, thus reducing their exposure to risk. Pregnant women are not immune, as it was formerly believed, and child-bed is even a predisposing factor. The explanation is simply that infected mosquitoes are attracted under such circumstances.

Though no race or nationality is exempt from malaria, the peoples descending from the Caucasian race (Europeans, Arabs from the Berber States, Hindus) show, according to *Hirsch*, the greatest predisposition, and namely in the sense that an attack of the disease predisposes as a rule to further attacks; the Malay and Mongolian tribes have a somewhat lesser predisposition, and least of all the Ethiopian race; individuals belonging to the latter do suffer from malaria, but only seldom and then in a mild form.

R. Koch has explained how immunity is acquired by the natives; he found that adult natives in malarial countries are free from the disease, whereas the children suffer most terribly up to 100%. If they recover they gradually acquire by fresh attacks or relapses a definite immunity. The number of children infected with malaria diminishes as age advances; at the age of 10 there is generally found as a last sign of former malaria an enlarged spleen, which also disappears towards puberty, so that the adult native appears finally as a healthy individual immune against malaria.

If we wish therefore to be informed how and to what extent a certain locality is subjected to malaria we must examine not only the adults, but the children as well, and particularly the very youngest among them. Where the latter are affected malaria is endemic and one must be prepared for the outbreak of an epidemic should circumstances favour the development of the malarial parasites. *Koch* has also demonstrated that immunity against one form of malaria *f. i.* the tertian, does not protect against other forms such as the quartan or tropical.

Thanks to the improved knowledge of the cause and distribution of malaria, and to the perfected methods of examination of the blood we are to-day in a position to take precautions with a definite object in view, and by adopting *Koch's* advice to undertake the stamping-out of malaria.

The personal prophylaxis consists in the administration of 1 gramme of quinine, according to *Koch's* method, every 10th or 11th day, for the purpose of destroying the parasites circulating in the blood; embrocation with ethereal oils and the

use of mosquito-nets or curtains are of value as protectors against the parasite.

The general prophylaxis endeavours to prevent infection by destroying the mosquitoes. It has been proposed to pour petroleum over the pools in which the anopheles finds a breeding place, and then to kill the larvæ. But this practice has not proved successful for various reasons. Similarly, the attempts to drain the marshy districts have fared no better. The idea is theoretically correct but on account of the great expense it entails, capable of being carried out in small localities only. Where anopheles-containing pools can be easily drained, this must be done, of course, but it is necessary to remember that the process must be repeated regularly and most scrupulously, otherwise the result obtained will be of little value.

Opposed to these measures, is the proposal of Koch to exterminate the malarial parasites, and for this purpose it is necessary to find out not only the severe cases but also the very mild ones which hardly ever come under the notice of the medical practitioner. This can be done by means of the examination of the blood. By following this method Koch succeeded in a short time in rendering Stephansort (New Guinea) perfectly free from malaria. But as the circumstances are not everywhere so favourable as in Stephansort it is hardly to be expected that the results will always be the same, but reports from other places seem to offer every encouragement. On the other hand Plehn¹ points out that Koch's proposal is not free from disadvantages. In large localities it is practically impossible to find out and examine all the inhabitants; the physical exertion of a small number of medical men such as can be obtained in the tropics would hardly be equal to the task; and the constant coming and going of the ordinary traffic would certainly prove an insuperable obstacle. The process recommended by Koch would moreover arrest the natural immunisation which goes on in native children, and this would result in their being attacked by the disease later in life when they have changed their habitation. It would in fact mean injury

¹Archiv. für Schiffs- und Tropenhygiene 1901.

to a large number of natives in order to protect a small number of immigrants.

Yellow fever.—A more limited significance than malaria is possessed by yellow fever, a disease associated entirely with tropical and sub-tropical conditions and one which spreads only under special climatic circumstances. As permanent foci may be regarded the Antilles and Mexico which are generally supposed to represent the cradle of yellow fever; from there the African coast from the mouth of the Senegal to the 5th degree of northern latitude became infected with Sierra Leone as the principal centre; this was also the case with the Brazilian coast, especially the ports of Rio de Janeiro and Santos, which are at the present day suffering from a permanent epidemic.

Yellow fever attacks with predilection the white race; the yellow race is affected to a much smaller extent, and the negroes are practically absolutely immune against it. Mulattoes show little predisposition but not the immunity possessed by the pure African race.

It appears that the susceptibility to yellow fever stands in inverse ratio to the average temperature of the zone from which the individual springs. *Griesinger* has pointed this out with reference to Europeans by showing that Norwegians, Russians, Germans and Dutchmen are far more liable to be attacked than Frenchmen, Spaniards, Italians and Portuguese. The same thing has been demonstrated in America. North-Americans, Argentinians, Uruguayans, and Chilians are far more susceptible than Brazilians, Mexicans, Peruvians and Bolivians. Negroes, though immune against yellow fever, become susceptible to it or lose their immunity if they are born in colder zones or stay there for some years.

The susceptibility of white immigrants into yellow fever zones diminishes while they remain there. Acclimatisation has always played an important part in the estimation of the danger threatened from yellow fever. According to an old doctrine, it was assumed that a stay of 5 years in a yellow fever district was sufficient to impart such immunity as is possessed by native children in their 5th year of age, and this appears to agree

with the facts. An interruption in the sojourn annuls the immunity obtained, and the latter can moreover be acquired only where yellow fever is prevalent, and not at a greater or lesser distance. Thus f. i. the permanent inhabitants of Rio de Janeiro are immune, but not so Brazilians coming from other parts of the country. Men and women are equally liable to be attacked, women perhaps slightly less because they are less exposed to infection. Among immigrants, there are generally more male sufferers than female.

During pregnancy, child-bed and lactation, non-acclimatised women have a greater predisposition to the disease.

The mystery surrounding the cause of yellow fever has also been cleared up recently with a probability amounting almost to certainty.¹ After several unsuccessful attempts to find the specific schizomycetæ, a North American expedition sent out to Cuba in 1900 to study the cause of yellow fever and having at its head *Reed*, *Carroll*, *Agramonte* and *Lazear*, was fortunate in discovering that it is possible to transmit the disease by a prick from a mosquito infected with yellow fever. The kind of mosquito coming in question is the *stegomyia fasciata Theobald*; a kind of culex present in well-known yellow fever localities. But the real organic cause of the disease is unfortunately not yet known. For practical purposes, however, much is gained by the discovery that mosquitoes act as hosts and transmitters of the disease-poison. The precautionary measures indicated are no longer vague and of a general hygienic nature, but consist in endeavours to prevent mosquitul inoculations. The prophylaxis is therefore similar to that relating to malaria, only comparatively more simple. Much has already been done, and successfully as far as it is possible to judge, in fighting yellow fever in Havana in the manner mentioned.

In 1901, all the cases reported were isolated, protected against mosquito-bites, and their surroundings disinfected; 26,000 breeding-places of mosquitoes were looked up and destroyed. In October, generally the worst month, there was not a single death or illness, as against 308 cases of illness and 174 deaths from

¹For details see my article in the Berl. Klin. Woch. 1903. 31-32.

yellow fever in the preceding year; the returns for 1902 are equally satisfactory.

Judging by analogy from what has been said with reference to malaria, immunity against yellow fever is probably acquired through repeated bites from infected mosquitoes which produce mild forms of the disease that escape observation. We may say that the mosquito-theory of yellow fever explains the whole epidemiology of this disease in a simple and natural manner and that we are at present in a position to account for its method of dissemination, its predilection for certain places and its absence from others. We can also understand now why—and this is a fact which has been known for more than a century—elevated places in yellow fever districts are free from the disease in spite of the frequent contact of persons and objects with infected centres. All these phenomena are connected with the *stegomyia fasciata* and its mode of life; wherever this insect can fly and remain yellow fever will under circumstances spread.

Cholera.—With regard to the two most dreaded infectious diseases, cholera and plague, it has also been possible since their respective causative agents have been recognised, to gain points of view which are practically important for purposes of prophylaxis. Cholera and plague deserve mention here as they are in the tropics endemic diseases; they have repeatedly assumed the form of violent epidemics affecting regions far beyond their centres, and even that of pandemics.

Cholera is for the whole world with the exception of the Ganges Valley an imported disease which has made the tour of the globe in 5 great pandemics. The infection takes place as proved so convincingly by *Koch* and his school, by means of infected water, coming from rivers, wells or other similar sources, occasionally through infected articles of food, milk, etc. if these have in any way come in contact with the infected water. The isolation-measures formerly in use have shown themselves ineffective in arresting the disease because those who suffer from cholera obviously and seriously do not as a rule travel, and mild cases which are just as infective are not

recognisable. On the other hand, the precautionary remedies suggested by *Koch's* theory and consisting of a good water-supply, reliable sewerage, isolation of the first patient observed and of those infected by him, thorough disinfection of the discharges and all objects coming in contact with them, have proved of benefit as prophylactics. Gastric and intestinal affections, even simple errors in diet, increase the individual predisposition; experience has shown that men, women and children are equally affected, and that puerperal women are more liable to be attacked.

Plague.—The specific bacillus of plague, discovered by *Yersin* and *Kitasato* has the peculiar property that it is very easily conveyed to rats and mice and that these animals as well as infected human beings, who are apparently in good health though harbouring the plague-bacilli, can import the disease and disseminate it. The infection takes place through abrasions in the skin and the entrance of the bacilli, in pulmonary plague through inspiration of the same; it is questionable whether the infection can also take place through the medium of food and drink. With regard to plague also the susceptibility of the sexes is alike.

If we consider the progress made in the recognition of the cause of these diseases and in the knowledge of the means by which to combat and to avoid them, we may fairly say that they no longer constitute any obstacles against the acclimatisation of European colonists. On the contrary! The latter have thanks to their social education certain advantages over the natives who also have no natural immunity against these diseases, even where they are endemic. Cholera is perennial among the inhabitants of the Ganges-delta, and as regards plague it has been noticed that Negroes are more liable to attack than others, after them come the Berbers and Nubians, and in the third place the Arabs; Europeans are most favourably situated in this respect and from among them the Northerners are more protected than the Southerners such as Turks, Greeks and Armenians. The Parsees are said to possess a certain natural immunity. The Chinese however who are otherwise particularly suited for colonisation purposes are also subject to the

influences of the endemic diseases. According to *Hirsch*, predisposition plays here a less important part than social considerations; superior hygienic conditions seem to have a greater significance in regard to predisposition than membership of some definite race.

Protective inoculation.—We have already seen how the immunity against malaria formerly believed to be attached to the negro race is produced by the endurance of the disease at an early age. Exceptionally there may be occasionally noticed a natural immunity against cholera and plague also, arisen individually and spontaneously; experience however teaches that such immunity can only be acquired through overcoming an attack of the respective infection, and it is upon the basis of this process that endeavours have been made to protect individuals by inoculation against cholera and plague. Though partisan hatred and favour may incline one way or the other, practical successes cannot be denied; the inoculations have in any case for emigrants to dangerous localities at least the meaning of important precautions.

An example of successful inoculation we have in vaccination which has resulted in rendering small-pox as no longer a dangerous element in regard to the settlement of Europeans anywhere. Those who are opposed to vaccination, and there are hardly any among them who are scientifically trained medical men, should see the striking difference in countries where small-pox is prevalent between the vaccinated and non-vaccinated without distinction of race and social position, and they would soon admit their error.

Dysentery.—By the provision of a good water supply it would be possible to counteract the dangers arising from dysentery, as the producers of this disease, the special bacilli and amœbæ are generally introduced into the body through the agency of water. The dreaded tropical abscess of the liver is in most cases also a consequence of amœbal infection. It is superfluous to add that for purposes of prophylaxis against dysentery improved general sanitation and careful nutrition are necessary requirements; suitable arrangements for disposing of the fœcal discharges generally, and in cases of dysentery

particularly, are essential for the prevention of the spread of the disease.

Rational nutrition can do much in preventing the gastric and intestinal troubles so frequent in the tropics, as well as the consequences to which they give rise. Diseases of the liver are not so common as it is generally believed and are not *eo ipso* a result of the climate.

A glance at the pathological dangers of the tropical climate reveals the fact that the armamentarium of modern hygiene is able to cope with them, and that they are not permanent but temporary factors which oppose acclimatisation. With the advance in general civilisation it will probably be possible to overcome all endemic diseases.

Possibility of acclimatisation.—Only as far back as 10 years ago the opinions whether there is a possibility for the white race to become acclimatised in the tropics were sharply opposed to one another; the number and reputation of those observers who denied that possibility sufficed to render their opinion the preponderating one, and the latter received additional support from the conviction that the danger of malaria was insurmountable. As adherents of this opinion we find most English authors, among the French, *Dutrouleau*, *Leroy de Mericourt*, *Jousset*, *Fonsagrives*, *Baudin*, and others; among Germans, *Helfft*, *Mähly*, *Röver*, *Virchow*, *Hirsch*, and others. The Dutch author *Stokvis* was an absolute optimist; *de Quartrefages*, *Treille*, *Bertillon*, *Rochard* though not believers in the absolute capability of Europeans to become acclimatised looked upon the same with rather more favour. Unanimity of opinion on this important question has not been obtained as yet, but the scientific advances recorded above have resulted in creating a different point of view. Hope and confidence have been established that the difficulties connected with acclimatisation will be overcome, and the great activity displayed by scientists, governments and associations in colonisation efforts, as shown f. i. in Germany, France, Holland and Italy, is proof positive that the problem is seriously being dealt with. And although the practical results obtained so far are not so considerable as one would wish, more may certainly be expected and looked for. The

march of conquest which the white race has undertaken in the tropics is in reality an attempt to better the economic conditions of humanity, and it will require the united efforts of all nations to bring it to a successful issue. The old saying "white heads and black hands" will for the present have to remain in force, and the Negroes, the Indians and the Malays will, in view of the fact that they can multiply and thrive in the tropics without the assistance of other races, for some time to come furnish the requisite manual labour. In the temperate zones, the coloured races are inferior to the whites or to the Aryan mixed races.

Gradual acclimatisation.—More than 30 years ago *Quatrefages* made the suggestion of gradual acclimatisation; i.e. that colonists should proceed by stages from station to station until they reached the insalubrious districts. *Stokvis* has recently asserted that Europeans who are acclimatised in the sub-tropics can easily adapt themselves to the tropics, and *Felkin*¹ believes that the white race can accommodate itself to the tropical climate provided that one or two generations show first their vitality in sub-tropical regions.

At the tropics as far as the 11th degree of lat. the humidity of the atmosphere and the heat are not so great as in the real equatorial countries; the soil is also healthier; then there is the differentiation in the seasons which gradually disappears the nearer we approach to the equator, so that in the countries near the latter there is not even any distinct difference between rainy and dry periods. It is this circumstance in association with the humidity of the soil which retains the stagnant moisture and the greater humidity of the air that act injuriously upon the physiological functions of the whites. For these reasons the idea of gradual acclimatisation is certainly worthy of consideration.

It is also noteworthy that tropical heights of 1500-2000 m. are climatically equal to sub-tropical districts.

If acclimatisation in the tropics is to be possible, it is essential that the individuals concerned should be in perfect health

¹VII International Congress of Hygiene.

with normal hearts and undisturbed digestive functions. As to the foundation of families we have already seen what advantages accrue from intermixture with indigenous inhabitants or with such races which become acclimatised with greater ease. An occasional return to places in the temperate zone is of great value to the individual welfare, and equally advantageous for the propagation of a strong and healthy progeny is a frequent addition of fresh European blood by marriage with newly-arrived emigrants.

Favoured colonies.—The European emigrant has mainly made his way to such tropical countries with which the mother-country is in special relations either as former or present colonial possessions, or on account of the commercial intercourse or community of language. Hygienic advantages or disadvantages have generally received less consideration. But experience has shown that certain tropical countries are suitable for permanent colonisation, above all, most of the elevated places such f. i. as the Andes highlands in South America, the Mexican highlands, the high table-land of Abyssinia, the Himalaya Mountains and their forerunning chains in India, etc.; there also are some limited localities, even in the neighbourhood of flat coast-lands, or small islands at some little distance from the main shore which present on account of their exposed situation and abundant air-currents, better hygienic conditions and freedom from malaria. Further, there are some insular regions, f. i. among the Polynesian group the Sandwich, and Fidji island, which bear a good sanitary reputation; similarly St. Helena and the Cape Verde islands, whilst the portion of the African continent lying opposite to them, Senegambia and Upper Guinea, are notoriously unhealthy.

Particularly suitable from an hygienic point of view is, to all appearances, Queensland and even its territories extending right into the tropics.

The European immigrants, English, German and Dutch, have since the discovery of that colony by Cook in 1770, multiplied steadily. Thriving towns have sprung up in which there is an European-like traffic. Agriculture and mining are in full swing. The native

Australian races have been pushed into the interior. The public health is excellent; the towns are free from malaria and in the rural districts this disease is very rare; the reason may possibly lie in the peculiar vegetation of the open eucalyptus forests which permit the heat from the soil to escape easily during the night. There are cool nights; the seasons are distinct. There are no swamps.—The Europeans born in the country have developed well and for a century Germanic tribes have reproduced themselves, although they do not exactly live under a highland climate. (*Schellong*.)

For a description of the climatic conditions of the German colonies, the reader is referred to *Plehn's*¹ lectures.

The climate of Kameroun is characterised by an equable oppressive heat without considerable variations in the mean monthly temperatures, by copious discharges with great humidity of the air and very uniform winds, conditions which prevail in the West-African low-lands generally. The mean yearly temperature is about 25.4° C. and the humidity of the air very great, 88% on an average, rising to 92%. The northern part has only one rainy season, from April to October, shortly before and after easterly winds of extraordinary violence rage; then follows the dry season. In the south of the colony this marked difference is no longer noticeable. During the day there are sea-breezes coming from the West, and at night land-breezes from the East.—What makes the Kameroun low-land climate so hard to endure is the almost entire absence of marked differences in the temperature while the air is at the same time almost absolutely saturated with vapour. There is here in opposition to German East-Africa no season of the year during which real recuperation is possible; even in the coolest nights the temperature goes down but very rarely below 20°. More favourable conditions are offered by the mountains rising from the low-lands, and

¹Tropenhygiene mit spez. Berücksichtigung der deutschen Kolonien 1902.

by the high table-land which constitute by far the greatest portion of the colony, but which has so far been very little utilised for colonisation purposes.

Togo which lies in close proximity has an average temperature of 26.5, two rainy seasons, from March to June and from September to November; between November and March there are dry winds blowing from the desert and which are known by the name of Hermattan.

The South-West-African colony belongs in its northern part which forms $\frac{3}{4}$ of its extent to the tropical zone proper; the southern part is situated in the Cape region. It is noteworthy that the colony is extraordinarily poor in water. The coast-land is comparatively cool on account of the cold ocean-current which rises in this part of Africa from the South Polar sea and from which there are always keen south-west winds blowing landwards. The daily variation in the temperature is consequently very slight. The monthly average in Walfisch Bay is 14-17°, the seasonal variations 13.3-20.5°, the absolute extremes 38° and 3°.—The high table-land of the interior has in spite of its considerable elevation a higher temperature than the coast on account of the absence of the influence of the sea. The changes in the temperature are very considerable, the humidity of the air is very great, and the yearly temperature fluctuates between 14° and 19°. In the interior of the colony the differences in the temperature are considerable; in Omaruru there have been observed such extremes as 38° and 4°.—German West-Africa has generally speaking a climate which Europeans can bear well.

German West-Africa has, like Kameroon, a flat coastland and highlands in the interior; it has very much less rain and its vegetation is therefore far less luxuriant. In the northern equatorial coast-region the mean annual temperature is about 25-26°; and there are two distinct rainy seasons, between March and

South Sea, the Carolines and Ladrões possess an equable, humid, warm climate without perceptible daily or monthly variations, moderate eastern air-currents interrupted by occasional storms and copious, fairly generally distributed discharges.

PART II

Sexual maturity.—The duration of human life is like the seasons of the year, sub-divided in four periods. With the commencing development of the sexual maturity the individual ceases to be a child, and as every organic formation takes place slowly, the process of puberty in both sexes is also a slow one and fluctuating according to the time.

Menstruation.—The period of menstruation which in Germany begins as a rule at the commencement of the 15th year depends upon various circumstances so that considerable modifications occur in different places. The influence of race, climate, nutrition, mode of life, growth, employment, bringing-up, habitation, dress, customs, sensuousness and physical life is well-known, and to these may perhaps be added as a determining factor the hereditary predisposition.

Commencement of the same.—As a general principle it may be said that the more southern the home of a nation the earlier puberty makes its appearance. In the tropics sexual maturity begins between the age of 11 and 14, in our latitudes between 13 and 16 and in the north between 15 and 18. But Polar people also acquire maturity at an early age. Hitherto this has been observed principally in the Eskimos. Among the Samojedes it is also by no means an unheard-of thing to come across married women of 13 years of age. A physiological explanation why puberty should commence sooner the nearer a people are to the Equator or to the North Pole is not as yet forthcoming.

Those who have studied the question regard climate as the

chief cause of the variations. But it is hardly yet possible to distinguish which of the elements constituting a climate, namely mean yearly temperature, geographical longitude and latitude, elevation above the level of the sea, proximity of the sea, etc., claims the preponderating influence, if any, in the matter, and to what extent. Race is probably also an important factor with regard to the commencement of menstruation, but it is difficult to define that importance. (*Krieger.*)

(It is said that in the arctic regions the quantity of the menstrual blood is extraordinarily small, and that the Eskimo women menstruate only in the summer time and then only to an insignificant extent; on the other hand menstruation in the tropics is very profuse. In our climate the quantity of the menstrual blood is estimated by various authors between 100-250 grammes.)

The influence exerted on the appearance of menstruation by a luxurious and comfortable mode of life and also by an indulgent bringing-up may be seen from the calculation of *Brierre de Boismont* for Paris which shows an average age of 14 years and 4 months, whereas in women belonging to the middle-classes menstruation begins with 15 years and 2 months, in working-women with 15 years and 10 months and in servant-girls with 16 years and 2 months.

Experience has shown that generally women begin to menstruate later in country districts than in towns; the difference is sometimes as much as 6 months or a year. It is believed that town-women acquire the earlier maturity in consequence of the more intensive excitements to which they are subjected.

The figures given by some authors may be quoted here: According to *Tilt*, Indian women menstruate in Calcutta (at 11 years and 11 months) sooner than Negresses in Jamaica (14 years and 10 months), and Eskimo women in Labrador (15 years 3 months) sooner than Danes and Norwegians (16 years). *Joachim* found in Hungary the average age of puberty: 16-17 in Slovak girls, 15-16 in Magyars, and 13-14 in Jewesses. *Vogt* gives for Norway 16-17 years in Laplanders, and 15.2 in Kwain-women. Fre-

quent variations occur round these average figures. *Litzmann* says that in Smyrna one sees mothers 11 years old; in the North of Persia the signs of female fruitfulness appear with the 13th year, and in the South already between the 9th and 10th year; in Eboe on the coast of Guinea between the 8th and 9th year.¹

The average age at which young girls begin to menstruate in non-European countries is 13 in Palestine, 13-14 in the Singalese of Ceylon, 12-18 in Siam, 16 in China, 15-16 in Japan, 14 in the East-Indian Archipelago, 11-13 in the tropical and sub-tropical parts of South-America.

End of the same.—Where the natural desire appears precociously early, it also disappears sooner, and the productiveness of the female body ceases completely at the 30th and often already at the 25th year. *Tacitus* certainly uttered a true experience in ascribing the prolonged youth of the Germans to their late marriages.

As regards our temperate climate, and under regular circumstances, we may say that menstruation ceases between the 45th and 50th year, though there is little precision about it, and that the menstruating life lasts therefore from 30 to 35 years.

Experience teaches, according to *Scanzoni*, that women who begin to menstruate at a very early age, f. i. at the age of 10 or 11, generally enter the climacteric earlier than others, so that the menopause occurs at 40 or 42. On the other hand others maintain the contrary, namely that women whose menstruation commences later in life reach the climacteric very early, and that those who begin to menstruate very early continue to do so until a comparatively advanced age.

Certain observations seem to favour the view that among the lower classes menstruation ceases sooner than in the upper.

Mantegazza has established climatic differences for Italy in the sense that the cessation of menstruation occurs in North Italy between the ages of 44 and 46,

¹*Hensen*, Hermann's Handbuch d. Physiologie, Vol. VI.

and in Central Italy between 45 and 47; in the South it falls as a rule in the 45th year, but it may be delayed to the 50th or 60th year.

Early marriage especially before complete maturity, generally results, as experience shows, in early decay. The women in Bosnia and Herzegovina begin, according to *Roszkiewicz*, to look old when they are 35 years of age; *Tuke* mentions that the Maori women when 25 or 30 years old appear more like 40 or 50; the cause of their premature decay probably lies in the early beginning of their sexual life. In Chinese women menstruation lasts, according to *Mondière*, at the utmost till they are 40 years old, in the Japanese it goes on, according to *Wernich*, until the end of the fourth decade. *Kögel* says that the custom of early marriages in Java accounts for the circumstance that Javanese women do not become pregnant after the age of 35, and *Finke* reports that Banganese women cease to conceive at the age of 20.

A frequent phenomenon after the cessation of menstruation in matronly women is the accumulation of adipose tissue in all parts of the body, which sometimes assumes extraordinary dimensions. In consequence of the gradually relaxing and more expansible state of the connective tissue the adiposity tends in contrast to the elastic condition in young women to form depressions and wrinkles.

Duration of sexual maturity in the male sex.

The commencement of puberty cannot be ascertained in man so accurately as in woman; it is assumed that the former becomes sexually mature about one year later than the latter. The development of the testicles occasions as circumstances show, an intensive growth in certain definite parts of the male body. The most noticeable external sign consists of an alteration in the voice; the beard and pubic hair begin to sprout; the bones and muscles become stronger and the generative organs receive their complete development. The rule that the beauty of mammalian male animals lies in their full bodily strength applies therefore to man as well.

As in the female sex so in the male the signs of puberty show themselves in hot countries at an earlier age; in Egypt, f. i. according to *Hartman* in boys of between 11 and 15.

The prematurity of the male youth in the tropics is accountable for the very early commencement of sexual intercourse. The unrestricted social customs of many non-European countries afford most varied opportunities so that young men of 16 or 17 are in the habit of regularly gratifying their sexual desires.

In the advanced age of the man the process of sperm-formation retrogrades gradually. According to *Duplay* and *Dieu* the number of normal spermatozoa in the epididymis diminishes, but on the other hand there are many misshapen ones, especially with deficient tails.

Semen to a certain extent normal is occasionally found in very old men, but the generative faculty begins as a rule to decline in the 60th year; frequently the offspring of advanced age are imperfect.

(Of 165 old men those between the ages of 60 and 70, showed 65.8% with production of semen; those between 70 and 80, 59.5%, and those between 80 and 90, 48%.)

Marriageable age.—Law and custom have regulated the marriageable age. As a rule we may say that the lower the grade of social civilisation of a people the earlier the age at which its girls are allowed to marry. Improved customs raise the regard for, and the value of, woman; moreover the fact that among civilised nations marriage renders the creation and support of a separate household necessary, contributes materially to its postponement.¹

Whilst *Lycurgus* forbade all young Greeks to marry before attaining the age of 37, *Plato* demanded for men the marriageable age of 30, and for women 20. Under the Emperors of Rome the completed 12th year was considered as a sufficient majority for marriage, but

¹*Ploss-Bartels*: Das Weib in der Natur- und Völkerkunde, 1898.—*Peschl*: Völkerkunde, 1885.—*Johannes Ranke*: Der Mensch, 1894.—*Ratzel*: Völkerkunde, 1895.

there are proofs that girls married when they were only 11 years old.

The less civilised European nations, especially those in the South, have not yet discontinued their custom to marry their girls very early. Among the Ricas, a tribe of the southern Albanians, girls marry at least when they are 12 and boys when they are 15, and yet these premature marriages do not seem to impair at all the really athletic form of this type of humanity. It is however to be remembered that Albanian women are considered fully mature at the age of 12. Among modern Greeks on the other hand sexual maturity does not occur before the age of 14 or 15 in females and 16 or 17 in males. The Ruthenians in Hungary are also in the habit of giving their girls in marriage when 12 years old, and of the southern Slavs it is reported that as a rule their women marry when they have completed their 16th year and their breasts begin to swell.

The legislation of all civilised States has proceeded from the point of view that it is necessary to obviate arbitrary decisions, injurious to the community, by definite legal enactments. Naturally it was the Church first that interfered in questions relating to marriage, and canon-law fixed the marriageable age for boys at 14 and for girls at 12. An analogous regulation is found in the middle-ages in the Longobardian, Frisian, and Saxon laws and also in the "Schwabenspiegel" (a south-German code of laws founded on the "Sachsenspiegel"). The present-day German law fixes as the minimum age for men 20, and for women 16. For the whole of Russia there is a law in force which prohibits under pain of transportation to Siberia marriage with a girl under 16 years of age.

Youthful marriages are uncommonly frequent among extra-European nations. Not without influence on the custom of early marriages in the East are probably the religious institutions which act in association with the climatic causes. Marriage is one of the religious duties of Mahometanism and Mahometan girls are permitted to marry when 10 years old.

Oppenheim says with regard to Turkish women that they menstruate at the age of 10, marry at 12, become soon mothers, are very prolific, cease to menstruate at 20, grow old and decay very early.—*Klunzinger* reports that in Upper Egypt boys of 15 to 18 marry girls of 12 to 14, and adds significantly that these marriages which are in our estimation premature are moreover to the extent of about two thirds entered into between cousins without showing any ill-effects upon their fruitfulness. With the Chinese it is customary though not legally enacted for girls not to marry before they are 15 but to wait as a rule till they are 16, and for men not before they are 20. In Japan the marriageable age was up to recently in men 16 and in women 13. In North Polynesia, in the Hawaiian Archipelago, girls are said to be ripe for marriage in their 8th year, but they may not marry before they are 14.—Among the negroes in Africa marriages also take place early, and mothers 14 years old are no rarity. *Erman* has recently recalled the circumstance that in the Aleutian island Atcha boys may marry as soon as they can drive a "baidare" (a vehicle) and girls when they can sew properly, that is generally in both about the 10th year.

Numerical proportion of both sexes.—Nature looks to it that there shall be as many men as women and provides approximately one woman for every man. Among civilised nations it is proved that there is an excess of male births.

A report of the statistical office of the Italian Minister for Agriculture on the proportion of male to female births for a period of 19 years and with respect to 32 countries shows that there are constantly 105 boys born to every 100 girls.

In Europe the female sex shows in the first periods of life a markedly smaller mortality than the male; moreover, the shorter duration of life in men is a widely spread phenomenon which is to some extent easily explained. On this account there is in the later periods of life an alteration in the original pro-

portion to the disadvantage of the male sex. The entire population of Europe shows therefore a predominance of women over men so that there are 102.1 of the former to 100 of the latter. But this does not apply to all countries in the world; for some show exactly the reverse. In the proportion of women to men there is also a racial element at work; on the whole there are in Europe more men than women among the Latin and South Slavonic nations, and more women than men among the Teutonic and North Slavonic peoples.

But human customs and practices as well as influences whose nature we do not quite comprehend as yet, do their utmost to alter this proportion. Economic and political measures tend sometimes and in some places to increase the number of one sex over the other as f. i. emigration, military requirements, etc.

Monogamy always acts compensatingly to a certain extent, and re-establishes the balance in a comparatively short time, where it is disturbed as for instance in newly-opened countries through the overwhelming immigration of men. On the other hand polygamy is supposed to be mainly responsible in uncultured nations for the disturbance in the numerical equality of the sexes and for the dangerous fluctuations of the population.

In nations of a low type which constantly struggle against misery, the number of women is apparently far behind that of the men. According to the census of 1881 the natives in the South Australian colony numbered 5628 individuals of whom 2430 were women; of the 883 children only 405 were females. The infanticide prevalent among such tribes generally affects more the weaker sex, and its surviving members suffer too much from the greater share of hardships which falls to the lot of the women-folk of wandering nations.

Where a population is declining it seems that the female portion disappears more rapidly than the male. Such nations are generally warlike; the loss of a woman is therefore no loss to them. Single women are allowed to perish unmercifully. The harder the struggle for existence the greater the necessity of the weaker sex to

seek the companionship of the stronger one; this is the reason why in such countries as Greenland single women find it impossible to exist long without male children.

One of the characteristics of the colonies is the smaller number of women, because women emigrate as a rule less than men. Migrations disturb the progress of a population; in the emigrant countries more women remain behind, in the immigrant a preponderance of men is formed. An excess of women over men is present among nations in all states of civilisation whose male half has been reduced by war or emigration.

The state of unrest of many nations which are in a barbarous condition is not favourable to the growth of the female element. There are large emigrations as f. i. those of the Chinese to the shores of the Pacific Ocean and to the West-Indies in which the female sex is not represented by as much as 1%. In British Guiana there are in spite of the regulated emigration of Indians only about 10,000 coolie-women to 30,000 men.

Polygamy causes in some tribes the number of women to increase, in others to decrease. A more just sub-division of property, such as is claimed by some in other directions, has in any case been attained with regard to women by the system of monogamy which prevents an accumulation of women in the hands of rich individuals and especially in those of heads of State. In so far as civilisation depends upon the steady and regular growth of nations it owes this blessing to the decline of polygamy. Wherever the latter prevails,—and all uncultured nations are formally or practically polygamous,—the women are unequally divided and the number of births diminishes. Many men go without women even where the latter are greatly in excess as f. i. in Uganda; a few know how to obtain a great number. But these are not able to make up for the loss in births caused by the compulsory celibacy of so many others. *Malthus* already knew that in Turkey the monogamous marriages of the Christians were more productive than the polygamy of the Turks. This assertion has recently been amply confirmed by modern investigators.

The necessity to work acts regulatively on these conditions.

Where the natives are in regular employment their physical well-being and their favourable social relations are evident.

Baetz says that the infantile mortality among the working populace of Japan is low, whereas it is high among the decrepit higher ranks. Although polygamy is legally permitted in China and Japan it has fortunately for them never become so universal there as in other countries.

Special marriage-forms.—Marriages are called polygamous or polyandrous according as the household is conducted by one man with several wives, or where one woman belongs to several husbands at the same time. Polygamy is prevalent all over Africa; it was also permitted by almost all Asiatic nations; in America on the other hand it is seldom met with.

There is an often quoted statement to the effect that in polygamy female births preponderate and that Nature adapts herself so to speak to the locally prevailing marriage-customs. This is however doubted and credible observers have testified that boys and girls are born in the harems in exactly the same proportions as under monogamous circumstances.

Breeders of animals assert that in race-horses, greyhounds and Cochin-China fowls the proportion of the sexes in births remains undisturbed though the strictest polygamy is employed in these animals. (*Darwin.*)

Genuine polyandry is seen among the tribes which form a transition between Asiatics and Americans, namely among the Eskimos, the Aleutians, the Konjacks, the Koljuschis, in whom other sexual aberrations are also not wanting; also among the Maoris of New-Zealand, and among some tribes of the southern Malabar coast and the Nilgiri mountains, and in Ceylon.

Origin of marriage.—*Lubbock* maintains that early man did not practice nuptial cohabitation and that the women were common property of all the male members of the tribe. He describes the condition as hetarism. The majority of ethnographers and anthropologists do not share this opinion; there

may have been mistakes in the interpretation of certain forms of marriage and of the influence of local barbarism. The view that pre-historic man did not know what marriage is seems incredible, as we find even in animals a sort of strict pairing; *Darwin*¹ also has denied the probability of a common property in women.

Adolf Bastian in a lecture before the Berlin Anthropological Society has expressed most admirably his views on the development of the different forms of marriage, in which the conditions of Matriarchate and Patriarchate play a very important part. There is no question in the former of any privileges attached to the female sex, but rather the profoundest contempt such as the strong always have for the weak where might is right. In the primary horde it would have been the physically and morally strongest men who appropriated the women first and naturally they would select the younger and most attractive ones. With the arrival of offspring the father would decline all further obligations, and the latter would devolve entirely upon the mother.

A transition to patriarchate is occasioned by the sympathy springing up in the father's breast for the children of his flesh and blood, though perhaps only on account of the assistance which they might render him in his agricultural pursuits associated with a more settled mode of life, and because it would be a disadvantage to forego this assistance.

Consanguinity.—In many tribes we meet with the custom that the closest relationship is not only no obstacle against marriage but rather an additional advantage, and on the other hand we see in others that such marriages are prohibited not only between close blood-relations but also between persons whom we should at the present day hardly regard as relations at all, f. i. foster-brother and foster-sister. In civilised countries definite laws have been passed regulating the degrees of relationship which act as impediments to marriage, but the laws of the different States differ materially from one another. The hereditary influence of consanguineous marriages upon the

¹Descent of Man, Vol. II, p. 358.

offspring is of great importance to the hygiene of marriage and for this reason specially dealt with in a separate chapter of this treatise.

Infantile marriages.—A brief reference to marriages between children is here indicated. Very few nations practise the habit of marrying their children when they are very young—between 4 and 9 years—, but the age of 10 or 12 is a very prevalent marrying age. Such early marriages do not of course mean in every case an immediate commencement of sexual intercourse. Among the Chinese *f. i.* the marriage contract is often concluded when the girl is only 6 years old, and the young wife enters the household of her husband; but the consummation of the marriage does not take place before the girl is at least 12 or 13, when as a matter of fact she is already fully developed. To our regret we hear that Europeans in Celebes are in the habit of keeping concubines of the age of 12 or 13, and the custom is so general there that no one seems to find fault with it. India is always spoken of as the classical land of child-marriages. On account of the numerous physical injuries which these children suffer in their marital intercourse, an agitation is at present on foot to abolish by law this institution so horrible to the feelings of every humanitarian. There are cases where some of the poor creatures have become mothers without ever having menstruated. It is astonishing to hear that the child-birth of such young mothers often takes place without any injury, though many of them do lose their lives.

It seems to be an established fact that premature sexual intercourse is capable of hastening the first appearance of menstruation; experiments which *Coste* has made on rabbits also seem to show that irritation of the genital organs can expedite the maturation of the ova and their separation from the ovaries.

Premature senility and an early extinction of the conceptive faculty are said by many authors to be a direct consequence of infantile marriages. (*Ploss-Bartels.*)

Beauty of female sex.—The consideration of the beauty of women from the æsthetic point of view is the concern of the artist. The scientist's demand is that the female

body shall be so constituted in all its parts as to be fully equal to the sexual functions of the female sex.

Climatic and different other external circumstances are as a rule of decisive influence, sometimes beneficial and sometimes injurious, upon the physical and moral development of human nature in general, and the female sex especially. The position of woman in the social life and the activity allotted to her by convention among all nations contribute to the more or less beautiful development of the female form. Among uncultured people in their state of naturalness, among stunted tribes with primitive customs the contrast between man and woman is not pronounced but rather obscure. With the growth of civilisation it becomes clearer and clearer and it advances step by step. Rural populations living in a secluded state, and proletarians constantly bowed under the yoke of hard manual labour exhibit in both sexes almost the same physiognomy (*Riehl*). Among civilised nations living in comfort, beauty and nobility of features progress from generation to generation along with the mental improvement, though nature does like occasionally to create beautiful female types under the most unfavourable external circumstances and among nations in a low state of culture.¹

Cordier said in a thesis laid before the Anthropological Society of Paris: Beauty is not at all the property of one race or another. Each race differs as regards its own beauty from the other races. Rules of beauty are therefore not general, they must be studied specially for each race.

Although the conception of beauty is uncommonly different among the different races and nations, it becomes in the male suitors an unconscious cause in the selection of their breeding-partners. *Darwin* maintains that women transmit their beauty to their female children to a greater extent than to their male offspring; and for this reason women have gradually become more beautiful than men.

¹*Ploss-Bartels*. See also *Stratz*, "Rassenschönheit des Weibes" 1901, and "Schönheit des weiblichen Körpers" 1900.

Through the mixture of races the female beauty gains in quality, but it is not yet known which peculiarities of the father or mother are of greater influence on the products of the race-mixture.

Nations which intermarry only within their own race create descendants who exhibit most markedly the characteristics of that race. Intermixture with other races produces by hereditary transmission in the offspring either paternal or maternal peculiarities.

There are thousands of ethnographical proofs. If a negro mixes with an Egyptian woman, the children have yet the hair of the negro race, but the grandchildren's hair is already smooth and they resemble the Egyptians. Europeans and Turks procreate with Abyssinian women children who approximate in their physical type Spaniards and Portuguese. The cross-products of Javanese and Europeans are strikingly good-looking; they have neither the turned-up nose of the Malay nor the big smiling mouth and the narrow eyes. *Finsch* saw a two-year-old child of a white man by a woman from New-Guinea which looked like a sun-burnt European child with curly fair hair, dark eyes and red lips. An interesting type is that of the mulatto woman, a product of the union between a white man and a negress, on account of her slender build, delicate hands, rounded breasts, tall stature, small and dainty feet, and all this associated as a rule with a frolicsome disposition.

A universal admission as to the representative of which race or mixture of races deserves the first beauty-prize has as yet not been possible to obtain nor is it likely that one will ever be obtained, seeing that opinions on the subject of beauty are as different as the conceptions of beauty-ideals.

Mixture of races.—The definition of "kind" by *Decandolle* is that "it is the union of all single individuals who resemble each other more than others, and whose sexual intercourse produces fruitful descendants who in their turn also renew themselves by succeeding generations."

Flourens was also of the opinion that fruitfulness establishes the permanency of peculiarities; different kinds produce however cross-products of limited fruitfulness only.

It was formerly believed that the offspring of different human races possess no fruitfulness. But this is by no means the case. Even in the breeding of animals it is seen that those which avoid each other sexually when in a state of freedom can be brought together for the purpose of mixing their blood and characteristics. It has never been denied that Aryan Hindus can produce mixed descendants by Dravidas, and that these descendants are in their turn capable of reproduction; the same may be said of Chinese with European women, and of Arabs with negresses. It is however frequently said that mulattoes do not survive many generations. The women of mixed blood in Central-America are also said to be sterile as a rule. But the cause of this certainly frequent occurrence is by no means a physiological one. It is due rather to immoral life and early excesses. On the other hand mulatto-women of every imaginable prolificness are by no means rare. The fact that on the island of Cuba and in Hayti half-blooded populations have grown up in hundreds of thousands is at least sufficient proof that the descendants of South-European Creoles and Negroes are reproductive. Complete sterility of the Anglo-Saxon mulattoes in Jamaica has only been observed temporarily and is even contradicted altogether. A further mixed race in America are the Sambos, descendants of Negroes by women belonging to the so-called red aborigines. They are often seen among the Creek-Indians in the United States, and also in Central America and the inhabitants of the coasts of Panama and Columbia bear decided marks of half-African blood. In the countries which were formerly Spanish colonies there are millions of cross-products by Europeans and native American women known under the generic name of Mestees. In South America there is a large population of mixed offspring of Negroes and Portuguese, in Chili one of Indians and Spaniards; in other parts of this continent there are the most complicated mixtures between Indians, Negroes and Whites, but it is just this triple admixture which supplies the strongest proof of the reciprocal fruitful-

ness of different races. The mixed race in Paraguay surpasses even in fruitfulness the two races from which it has sprung. An extraordinary reproductive faculty is witnessed in the mulattoes who are very plentiful in the European colonies as well as in the States of South America. The reason why there are so few mixed people in Australia is, as shown by judicial investigation, to be found in the fact that the natives are in the habit of killing their impure children. (*Darwin*.) Tasmanian women have also brought into the world numerous cross-products. Of greater importance still is the circumstance that half-blooded individuals have resulted from unions between Europeans and Hottentots, for if there is any type of humanity which may claim to be regarded as a special kind it is surely these aborigines of the Cape-countries.

These cross-products are called in their own country partly bastards, and partly Griquas; this last term has however been misused so much that it does not convey any longer a restricted anthropological meaning. (*Fritsch*.)—Finally there have been many kinds of intermixture between British, Dutch, Mulattoes, and Negroes in out-of-the-way islands, such as Tristan d'Acunha.—*Le Vaillant* says: Hottentots produce when they marry among themselves 3 or 4 children; when they unite with Negroes this number is trebled and it becomes even higher when they intermix with Whites.

The colour of the skin alters rapidly by the mixture of Europeans with brown-yellow South-African women; this does not take place so quickly where negroes mix with European women, the negro-blood comes to the surface in such cases even in later generations. The descendants of Europeans by coloured native women are called Creoles in such extra-European countries as were formerly Spanish, French or Portuguese colonies, the offspring of Europeans by Indian women are called Mestees (in Mexico also Ladinos, in Ecuador, Peru and Chili also Cholos), those of Europeans or Creoles by negresses are called Mulattoes, and those of Indians by negresses, Sambos or Chinos.

Where mulattoes intermix with whites the negro-blood is indicated in the subsequent generations by fractions: a *terceroon* is the offspring of an European by a mulatto-woman, a *quadroon* one by a *terceroon*, and so on from *quintroon* to *octoroon*. The *quintroon* is hardly in any way different from a white, and even before the abolition of slavery in the United States he was already regarded by law as a white. While the mulatto is still very much like a negro, the individuals possessing less negro-blood show yet the violet colour of the nails and a bluish ring around the eyes as characteristic signs, and these are the last to disappear. Vice-versa, if mulattoes mix with negroes, the white blood becomes quite extinct again in the 4th or 5th generation. The success of intermixture is however by no means regular or calculable beforehand. Just as among ourselves the union between fair-complexioned and dark people is not always productive of intermediate stages between the two types but sometimes of fair children and sometimes of dark, so the offspring of marriages between whites and coloured people may incline either to the one type or the other.

Even in later generations there is often a reversion to an ancestral link. With regard to the mixture of races between Whites and Kaffirs *Fritsch* says: The behaviour of the colour in the skin of the cross-products is very singular, and it is difficult to lay down any laws. What is certain is that such persons have often a strikingly dark skin which is as far as strength is concerned not one whit behind that of the pure race, and also that later generations have a tendency to atavism, inasmuch as the grandchildren are more like their grandfathers than the great-grandchildren.

The very light mixed race of Europeans and Hindus is known as Eurasians or Australasians; they are very numerous and politically of great influence in their country.

Marriage in the tropics from the medical point of view.—The hygienic advantages of marriage and of a household of one's own are for the male inhabitants of the tropics of particular importance; a regulated mode of life, suitable nourishment, a healthy home, and similar other

necessities are often very hard to obtain otherwise under tropical conditions. Many a promising career has been shattered through the impossibility of finding the necessary domestic comfort for the preservation of health under circumstances of an exhausting nature. And what a blessing it is to have a wife when sickness demands careful and intelligent nursing! It is more correct to say that it is in the tropics where both doctor and patient experience the want of the external conditions created by the married state. Some of the objections which Europeans in the tropics have against marriage from their point of view and from that of the eventual offspring are often practically disposed of by having recourse to concubinage.

Though we must bear in mind the unfavourable climatic influences on the female sex, it would nevertheless be a mistake to condemn on principle the marriage of every European in the tropics. As in everything else where medical advice is needed it behoves us to consider each case on its individual merits.

We cannot enter here into a discussion how far the relations between the various diseases and marriage with respect to climate and race present special features. It is for the first time that this subject is dealt with in this work by specialists in a comprehensive manner. It must be left to some future occasion to give my own experiences and those of others on the basis of the above mentioned relations. For the present I must confine myself to the mention of the geographical distribution of the two diseases which are as is well known, of the greatest importance to marriage and the offspring resulting from it, namely syphilis and tuberculosis.

Distribution of syphilis.—*Scheube* (Archiv f. Schiffs- und Tropenhygiene 1902) has instituted a general investigation on a large scale and ascertained by means of it that syphilis has become almost universally prevalent in tropical and sub-tropical countries. There are only a few isolated places not yet open to the commerce of the world, in Further India, on the Dutch-India islands, in Luzon, in the heart of Africa, in New-Guinea, and the island-groups of the South Sea, in the furthest interior of Brazil, whose inhabitants are as yet free from the ravages of this dreadful scourge. It is unfortunately

an incontrovertible fact that the carriers of civilisation have in newly opened-up countries introduced along with the blessings of culture the curse of syphilis. Wherever discoverers, conquerors, explorers, sea-farers and merchants have made their appearance syphilis was not long in following close at their heels and in infecting countries which were before as clear of it as they were of every vestige of civilisation; like a merchandise, as *Mense* says, syphilis spreads by stages from tribe to tribe.

Though syphilis is present in all warm countries with few exceptions, its distribution in the same is an unequal one. Of the greatest influence on the latter is the purity or laxity of the morals reigning among the inhabitants, and particularly the extent which prostitution has attained. The more freely and unrestrictedly prostitution goes on in a country the greater as a rule the prevalence of syphilis.

Seaumanoir (Arch. de méd. navale 1890) says it is generally well-known that in the Sandwich-Islands almost the entire native population is affected with syphilis. *v. Düring Pascha* estimates that syphilis is largely and equally distributed in Turkey and Asia Minor among all races, Circassians, Kurds, Tartars, Turkomans, Arabs, Christians and Mahometans.—In Burmah after the abolition of the control of prostitutes the percentage of venereally-diseased in the British army rose from 155 to 376 per thousand. Acquired syphilis is very often seen among the native Eurasian school-boys under 16 years of age. In Siam at least 70-80% of the male European population are affected, and among the Siamese it is a rare thing to come across a man even if belonging to the highest circles who has not had syphilis.

The most severely afflicted localities in Asia are the earliest habitations of the disease, India, China and Japan. In the Dutch army syphilis is present about four times as often among the Europeans as among the natives, most of whom are married.

The inhabitants of the African coasts are severely affected, probably through infection from Europe,

whilst Central Africa suffers to a comparatively mild extent only. On the East coast of the African continent and on the East African islands the number of syphilitics is estimated at $\frac{5}{6}$ of the whole native population. In Durban (Natal) syphilis exists among all classes of society. The frequency dates however from the discovery of the gold-mines which have attracted prostitutes from all parts of the world. In Windhoek (German West Africa) half the number of Hottentots and mixed products applying for medical treatment suffer from syphilis.—In Kaiser Wilhelm's Land (New Guinea) syphilis was according to the unanimous opinion of explorers unknown before Europeans settled among the native Papuans. The latter are very particular in not permitting their women to have sexual intercourse with white men. Soft chancre and gonorrhœa are also said to be unknown there.

In the Bismarck Archipelago where the native women are easily procurable gonorrhœa has become very frequent among the natives, and syphilis which was there also unknown must by now be quite a common occurrence.

It would be possible to continue this selection also with reference to the American Continent.

This general prevalence of syphilis is naturally not without influence on the public health and on the relation between births, miscarriages and deaths, and it often represents an important cause of the constant decline of the native population observed in some localities.

Generally speaking the course of syphilis in the case of Europeans is the same in the tropics as in Europe, but in the case of the natives it is as a rule more rapid. The primary lesions are often not noticed, the secondary eruptions are very transitory or absent altogether, the maculous syphilides are not recognised on the coloured skin, and tertiary symptoms make their appearance very early. The reason why the contagion is so severe among the inhabitants of tropical regions is probably because the hygienic surroundings of the natives leave

very much to be desired and because a rational treatment of the disease is unknown.

It was formerly believed that the negro race is immune against syphilis. *Livingstone* who in the middle of the last century found Bechuanaland as yet free from the disease whilst among the mixed races of the Korans and Griquas it was as prevalent as in Europe, made the assertion that syphilis does not attack the full-blooded negro, and that it appears the more frequently in mixed races the more European blood flows in their veins. Circumstances have however materially changed since then in Africa. Syphilis has with the increase of trade in the last 50 years made enormous progress in the dark continent, and even the natives of Bechuanaland who were at one time quite free from the disease suffer from it now to a very great extent.

Gonorrhœa has a universal distribution, but is hardly in any way different in different races and climates than it is in Europe, both in its form and its consequences. It is often maintained that gonorrhœa is mild in the tropics; other observers think it is more virulent; on principle such a differentiation is not justified. It is probably the attention given to the disease and the manner of its treatment which constitute the principal factors that determine the course of gonorrhœa; the same may be said with regard to the dietetic observance, particularly the abuse of alcohol.¹

Distribution of tuberculosis.—It is well known that tuberculosis is prevalent all over Europe.² It is only in a few places and under special circumstances that a deviation from the generally high mortality-figure occurs. It is reported f. i. that the disease is rare in the North-West European islands, in Iceland, Faroe, the Shetlands, the Hebrides, and in the North

¹Translator's note: I was recently informed by two gentlemen from South America whom I treated for post-gonorrhœal stricture that this sequela is exceedingly frequent there on account of the very strong remedial injections employed.

²*Hirsch*, Handbuch d. histor.-geogr. Pathol., 1886.—*Herm. Weber*, Münch. med. Woch., 1891.

of Norway; it is also said that Cyprus is almost free from tuberculosis.

In the United States of America tuberculosis is as prevalent as in Europe. The women show a larger mortality because being more confined to their homes they are more subjected to the contaminated air containing the products of the expectoration.—In Central America the coasts of Mexico and especially the towns Vera Cruz and Tampico in the East, and Guaymas and Mazatlan in the West, as well as the coasts of the Yucatan peninsula, of Mosquito and Panama are afflicted with rapidly progressing forms of consumption, as is also Lima on the coast of Peru. On the other hand the highlands of the Andes in Peru and the high plains of Mexico, Bolivia and Venezuela are more or less free from consumption.

The coast-lands of the Argentine Republic and those of Brazil are said to have been formerly quite free, but are greatly affected now since the population has increased considerably and many large towns have sprung up. On the other hand the villages and towns of the Cordilleras and their spurs enjoy to yet a certain amount of immunity. In British Guiana also the disease is assuming larger proportions. A great difference is noticeable there in the course of the illness; in the negroes it is very rapid and takes the form of a cheesy pneumonia, whereas in the coolies it is much slower and assumes more catarrhal and peri-bronchial character.

In Egypt consumption is rarely seen in the interior and especially in the desert, but it is very frequent in the coastal towns such as Alexandria. In Algeria it is not very prevalent but neither is it altogether rare. It is said that the Kabyles remain free from the disease so long as they lead a nomadic life. In the west of Africa tuberculosis is prevalent in many parts, near the sea as well as inland; the coast of Senegambia seems to make a striking exception. On the high table-land of South Africa the disease is rare.

This applies also to German-South-West-Africa, that *Katz* has made the Utopian proposal that labor colonies of work-people suffering from the disease in its early stages be formed there as a remedy for the

sufferers and as a means of raising the condition of the country.

In the East of Africa the disease is frequent and generally rapid in its course, and the same may be said with regard to the islands of Mauritius, Reunion and Madagascar. The same conditions prevail in the Polynesian islands, especially in the Sandwich group, and in most of the islands of the Indian Archipelago. In New Guinea pulmonary tuberculosis is either rare or as a rule imported.

On the high plains of Armenia, on the Syrian coast and on the high table-land of Persia consumption is relatively rare; in India it is not so prevalent as in the temperate latitudes of the Eastern hemisphere, but it does occur and it generally runs an exceedingly virulent course, like in the other regions of Eastern Asia which are tropically situated, namely Ceylon, Further India, and especially in Cochin-China, in China and Japan. On the other hand tuberculosis is exceedingly rare in the high plains of the Ghauts situated at an altitude of 1500-2000 meters, on the Nilgiri hills, and on the slopes of Himalaya.

Australia was formerly reputed to be highly immune, but has lost now this reputation, and it seems that the disease is constantly becoming more frequent among the increasing populations of the Australian coasts.

Climatic conditions alone without regard to other and especially social relations do not offer a sufficient explanation of the immense distribution of tuberculosis. The temperature does exercise a modifying influence, but is not the principal factor; neither cold alone nor heat alone can produce consumption, for there are regions both in the frigid and in the torrid zones which possess a high degree of immunity, and others which are severely affected. It is very probable that the humidity of the air is of injurious influence. The course of the disease is in tropical and sub-tropical countries as a rule much more rapid than in the temperate and the cold zones; it has also been pointed out that consumption exhibits in hot countries an acute and sub-acute character, and in cold and temperate regions one of a more chronic nature.

An almost universally recognised principle is that the eleva-

tion of the soil above the level of the sea exerts a great influence on the frequency of consumption. As evidence of this we have the rarity of tuberculosis in the Peruvian Andes, on the high plains of Mexico, Bolivia, Guatemala, Salvador, New-Granada, and on the Rocky Mountains. In the higher regions of Guiana the disease is seldom seen, whereas in the valleys it is terribly destructive. The same may be said of Abyssinia, of the elevated points in Armenia, Persia, East-India, etc.

Negroes are said to be more inclined to fall a prey to consumption than any other races, and it is also said that the disease runs in their case a more rapidly fatal course. It is questionable whether this condition is due to a peculiar constitutional anomaly or whether it is insanitary housing accommodation, insufficient nourishment and the whole mode of life which are responsible for it. The same causes may apply with reference to the higher susceptibility of some nations in comparison to others, which we occasionally hear of.

Of importance are the experiences that large tracts which were more or less free from consumption before they were colonised, showed an increasing mortality from this disease after being opened-up, as f. i. the United States of North America, Brazil and Australia. In the first instance it is the tubercle bacillus of which we must think in this connection; but then we must also not forget that where large numbers of people who have to struggle for their daily bread congregate and where they are obliged to live under unsatisfactory conditions and without sufficient food, powerful etiological factors are created which cannot fail to materially assist in the spread of consumption.

It is not the purpose of this work to discuss the unfavourable social conditions and other evils, and as regards the reciprocal relation between marriage and consumption the reader is referred to the special chapter in this Manual dealing with the subject.

Anthropological observations.—In the conception and among the customs of national life, marriage plays one of the most important parts with respect to its preliminaries, preparatory steps and consummation on the one hand, and on

the other with regard to married life and the duties allotted to married individuals, in view of such contingencies as pregnancy, labour, child-bed, and the rearing of children. We see these vital processes surrounded by the most wonderful products of the imagination, from the simplest and even crudest psychical emotions to the highest possible poetical glorification. Tradition and religious belief have here the greatest scope. Those who wish for more detailed information on the point may with advantage consult the perfect work of *Ploss-Bartels*: "*Das Weib in der Natur- und Völkerkunde*" which is one of the gems of German literature. Here I will only give a short summary of the anthropological studies in so far as they relate to the human body and not to the psychical existence of man.

Marriage is a psychological factor which is necessary for the physical welfare of man as well as of woman. So long as there are no morbid influences, no moral or material troubles to contend against, the bodily appearance of married men and women always improves in consequence of their regular mode of life; the commencement of senile decay is materially postponed. It is a well-known fact proved by statistics that marriage has a beneficial influence on the duration of life.

Celibacy.—The modern institutions of society as constituted in our present-day civilised States where marriage is subject to certain formalities make it possible for man to gratify his sexual desires without coming into conflict with established arrangements. For this reason celibacy in man is not physically so discernible as in the female sex. The so-called "old bachelor" may in the course of time also acquire certain physical or more often moral peculiarities, but they are far more prominent in the "old maid."

In the unmarried girls of the German nation the loss of freshness begins on an average in the 27th or 28th year; but often the first signs of the transformation become visible at the even earlier age of 25, and once started it goes steadily forwards. Anatomically speaking, the rosy colour of the cheeks disappears gradually, the skin becomes softer, the lips pale and thin, the naso-labial fold sharply pronounced. Deep shadows form under the eyes, the latter acquire a dull lustre

and sorrowful expression. The voice receives a sharp by-sound. A part of the down on the face develops into short but distinct hairs. The adipose tissue of the integument diminishes, and this is especially noticeable in the breasts which become smaller and often also flaccid and pendulous; on this account the neck appears thin, the shoulders more pointed, and angular, and the upper ribs and clavicles become more prominent. Moral indisposition and all sorts of nervous complaints accompany these conditions very frequently. A regulated sexual intercourse such as our social institutions make possible for woman only in the form of marriage would act like a perfect source of youth. Thus nature has her fixed laws which demand their due with inexorable severity.

Among uncivilised nations there are no old maids. With them it would be something unheard of for a sexually mature girl not to become the wife of some man, either for an indefinite period or for a life-time.

The pelvis and its organs in various nationalities.—In view of the importance of the pelvis and the pelvic organs in married life I give here the following brief anthropological notice:

Apart from the differences which exist between the pelvis of the man and that of the woman, there are such variations among the female representatives of the several human races that next to the types of skull the pelvis has become to ethnographers the principal organ for racial differentiation. As a rule the individual differences agree with the fluctuations in the physical build.

The pelvis of the European woman serves as the starting point and normal type of the observations. The oval form should be peculiar to the Caucasians, the quadrilateral to the Mongolians, the round to the Americans, and the cuneiform to the Negroes. (*Weber*.) *Martin* has the following group: I, Pelvis with wide inlet, in which the conjugate is almost as long as the oblique diameter, and at the utmost by $1/10$ smaller than the oblique diameter; this is the case in the Bushwoman, the Malay, Javanese, the generality of American and Australian aborigines, and the aborigines of the islands in the

Indian and Pacific oceans; II, Pelvis with oblique-oval inlet, in which the conjugate is more than $1/10$ of its length shorter than the oblique diameter. This is the average form of pelvis in the Caucasian women, and that in the African negresses approaches it in shape. With the increase in the oblique diameter the capacity of these pelves grows; in this respect English-women are said to excel physically and according to *Litzmann's* measurements Holstein women come next.

The pelves of Jewesses in Dorpat are according to *Schroeter* very small.—*Gutierrez* says that the pelvis in Mexican women is small and especially narrow towards the outlet.

Further peculiarities of the pelvis are to be found in differences which exist in the size, thickness and position of the iliac bones. The wedge-shaped and longer pelvis of the negress suggests the pelvis of animals. Other pelvic bones are also said to possess characteristic racial differences. The width of the base of the sacrum reaches its maximum in the white race, especially in European women, after them come the yellow races and finally the black. The height of the sacrum varies from six vertebræ in the African negroes to five in the Europeans. The curvature of these bones is most marked in the white races, especially the Europeans, then follow the yellow races, and the flattest sacra are seen in the negroes.—The angle of inclination of the pelvis to the vertebral column is also variable in size.

There is no doubt that the mode of life, as well as customs and habits have a certain influence on the prevailing form of pelvis. Of the greatest importance is above all the nutrition of the skeleton as a whole and the supply of bone-forming material. The kind of dress generally in use may have some effect upon the pelvis, especially when it is growing, in mechanically altering its shape, and the same result may arise from prolonged attitudes of the body in certain positions or from some special form of activity. The manner of carrying their children on the buttocks as practised f. i. by negresses may be the cause of lordosis of the spine and of a secondary displacement of the pelvis.

Besides the bony frame of the pelvis it is the larger or

smaller amount of fatty connective tissue, which varies so much quantitatively in the different nations, that determines the form of the female hips. The latter together with the development of the thighs, calves and shoulders constitute the general appearance of woman which we designate generally as figure.

The fatty connective tissue of the gluteal region shows quantitatively many variations, by which the external appearance is naturally altered. Australian women are markedly deficient in fat; on the other hand they exhibit occasionally such an increase of the same that it leads in extreme cases to fatty buttocks or steatopygia, a condition peculiar to Bushwomen and Hottentot-women, and regarded by them as a sign of beauty.

As regards the genital organs proper there also exist special peculiarities. The vulva may be situated either somewhat higher as, according to *Columbat*, it is the case in French women, Spaniards, Italians and in the South generally, or less anteriorly as in English and Dutch women; in Australian women also the pudenda are situated more posteriorly. The size of the introitus, the direction and length of the vagina are subject to considerable variations. Especially multifarious are the larger and smaller labia; lax, more or less adipose, of small or considerable size, the latter reaching sometimes enormous proportions, as f. i. the so-called "Hottentot apron," an hypertrophic development of the labia minora probably of artificial origin. The size of the clitoris also varies from rudimentary proportions to considerable dimensions which are likewise produced frequently by artificial irritation.

Racial differences with regard to the internal female genital organs have hitherto not been noticed, and considering that their functions are everywhere alike such differences probably do not exist.

The female breasts.—The female breasts in their youthful freshness have, as is well-known, inspired the poets of all times with highly rapturous sensations. As a matter of fact they take among the secondary sexual characteristics the principal place, and we can judge from many songs what

demands the æsthetic taste of the various nations have made on the ideal form of this physical organ.

In speaking of the racial form of the female breast one does not generally think of it as it appears during child-bed or lactation, or when undergoing the changes brought about by advancing age, but of the youthful and virgin organ of sexually-mature young girls at their best age. Considerable varieties of form are here noticed in different races. Sometimes the nipple is small and flat like a little button, sometimes more massive and of conical shape with a broad base and rounded point, sometimes large and cylindrical, almost like a finger. Like the nipples, the *arcolæ* also show considerable differences; sometimes they are pale, and sometimes dark-red, sometimes brown and even almost black in colour; sometimes they form small and sometimes large and even enormous surfaces; sometimes they project lightly and sometimes prominently like half-spheres from the curvature of the breasts, and sometimes they are separated from the latter by a pronounced circular constricting furrow.

It is possible that the different human races possess ethnographically well-marked characteristics in regard to the form of the female breast, and that the organ has undergone modifications under the influence of the mixture of races or nations. Hitherto no conclusive observations have been made on the point. But in order to fill up the gap for future observers I give here the following plan according to *Ploss-Bartels*: In regarding the curvature of the breasts we should notice whether they spring more or less immediately from the surface of the chest, or whether the latter begins from the clavicles downwards to gain in fatty connective tissue and to pass imperceptibly into the glands. The manner of their situation should be taken into consideration, whether they are placed higher up or lower down on the thorax, whether they take their origin nearer to the median line or nearer to the axilla. Of special importance is the consideration of their size (strong or massive, full, moderate, weak, small or sparse), their

consistency (standing, inclining, hanging), form and shape (saucer-like, semi-spherical, conical, goat-udder-like).

Physiology has given us proofs that the breasts belong to the sensual organs. The touch and gentle irritation of the mammary nerves are capable of producing by reflex action contractions in the uterine muscles, and in this way a pleasurable sensation in the entire organism. During sexual excitement the breasts swell and the nipples become stiff and erect. After conception and child-birth the breasts have quite a different signification for both mother and child.

The anatomical changes in the form which the organs show after lactation where they appear as more or less flaccid and lax cutaneous attachments, with wrinkled surfaces and discoloured areolæ are manifest in barbarous nations in many different ways. Whereas among civilised people the breasts are generally covered up and assisted by various kinds of support to obtain a pleasing form, the women of uncivilised nations are in the habit, especially in hot countries, of going about half-naked, and their ugly skin-bags hang down and away from the chest when they stoop over their work, in a most disfiguring manner.

Among barbarous nations and among those living in a semi-civilised state it is quite customary for the mothers to suckle their children, and it is unfortunately the women of the most civilised countries who neglect this duty either willingly or because of the physical inability of the mothers to fulfil it. This is the case with the old Hindus, the Japanese, the Chinese, and above all with the European nations, and chief among them the Germans and the French.

Under normal physical circumstances it is usual for Europeans to suckle their infants for about a year; country-people and also town-proletarians continue it sometimes up to two full years and even longer; a lactation of 2 to 3 years is practised by many women mostly out of Europe, and there are authentic reports that they prolong it very often for many years, even up to the 15th. (Eskimos.) The reasons for this are on the

part of the child a certain feeling of satisfaction, on the part of the mother a pleasurable sensation. The general opinion that so long as a mother suckles her child she runs no risk of conceiving has also something to do with the matter.

Prolificness.—Most nations in the world desire large families and the fruitfulness of the wife is regarded as a special blessing and as high conjugal bliss. Sterility on the other hand is looked upon as an imperfection of the wife. Where the evil cannot be removed, where it is not possible to break the spell adhering to the wife or to appease the anger of the deity, the woman is often turned away. As to the cause of sterility there existed in olden times and exist even yet among barbarous nations all sorts of mystical opinions, but the recognition is gradually advancing that abnormal physical development or diseased conditions in the wife must be responsible for it.

A high regard for fruitfulness is not common to all nations; some regard it even as something contemptible and animal-like (Greenlanders). In Europe also and among many civilised nations generally the joy at accessions rapidly following one another is very small. —The Roman Emperor Augustus fixed definite penalties for childlessness. —Unfruitfulness is considered in the Orient as a disgrace and Mahometans as well as the Eastern Jews regard it as a ground for divorce. The Turkish woman who has no children is but little respected. Chinese women look upon large families as the greatest blessing. The nations of Africa also consider childlessness as a disgrace.

From times immemorial endeavours have been made to counteract unfruitfulness, and all sorts of mysterious procedures have been adopted, such as medicines and mechanical remedies, baths, appeals for divine help in many forms and for supernatural human aid, sympathetic remedies, the invocation of assistance from dead persons, etc.

On the other hand there are occasions when temporary or permanent unfruitfulness appears to be desirable. Preventive measures of various sorts have been recommended, f. i. the interrupted form of intercourse, drugs and mechanical appli-

ances, etc. They are employed more by civilised than by uncivilised nations.

Considerable differences exist in the fruitfulness of different races, and occasionally it is possible to discover the causes by which these differences are produced. For details the reader is referred to the work of *Ploss-Bartels*.

If there happens to be in two nations of different races, a difference in the degree of their fruitfulness it does not by any means follow that a racial distinction is present. For closer investigation shows that greater or smaller fruitfulness depends greatly from a number of other factors as well. One of these is the moral condition of the population, its social state and associated with it the relative ages of the procreators to one another. One may doubtless regard as a favourable sign of the well-being of a nation its constant increase by means of a growing number of legitimately-born children; on the other hand a gradual decrease in the latter is a sure indication of a morbid state of morality or of social and political decay. We have evidence of this in the stagnant development of the French population.

It has been ascertained that marriages are most fruitful when husband and wife are of the same age or when the husband is from one to six years older than the wife. *Quetelet* summarised the results of the observations on the influence of age upon the number of births as follows: Early marriages favour sterility; from the 33d year in the man and the 26th in the woman fruitfulness begins to diminish; at about this period it reaches the highest point. The difference in the ages of the procreators depends of course partly also on the earlier or later beginning of puberty, and also on climatic elements.

It is known that in the Southern countries with Latin populations marriages are as a rule entered earlier into than in the North, partly on account of the earlier appearance of physical and social maturity among the inhabitants of the former, and partly because generally speaking there is not so much wanted there to establish a household and to maintain a family, and a livelihood is more easily gained than in Northern countries.

Moreover almost all Southern nations are more inclined towards matrimony than the more careful and circumspect Northerners, especially of Germanic Europe. It is consequently not so much race and climate as a state of civilisation brought about by conditions of development based on an historical foundation, and the mode of life regulating the sexual relations, which are the decisive factors. This accounts for the fact that different nationalities living in the East under the same climatic conditions exhibit different degrees of fruitfulness. Thus *Damian Georg* wrote about the nations living in Greece, that the Jews and Armenians there are very fruitful, the Greeks less so, and the Turks least of all.

It is reported that in the United States the women in the 5th and 6th generations become gradually paler and thinner. It is a fact that the number of births in North America is diminishing; the disinclination of the American women to assume the obligations of motherhood is not unconnected with this diminution.

The fruitfulness of European families emigrating to the tropics diminishes and a constant supply of fresh European blood is advisable for the purpose of keeping that fruitfulness alive.

It is also to be taken into consideration that favourable circumstances exert in every population a great influence on the procreation of descendants, but that numerous incidents such as the overburdening of the female sex and the frequent abortions resulting in consequence, premature marriages, the prevalence of certain diseases, debilitating habits of the male sex, etc. tend to prevent a great increase in the number of births. This is probably also the cause of the relatively smaller fruitfulness shown by some nations.

Accidental miscarriages.—Not a few nations of the earth suffer greatly from natural miscarriages. In very many cases the reason is to be looked for in an irrational mode of life, and among uncivilised nations to a great extent in the over-burdening of the women.

Thus the cause of the remarkable unfruitfulness in

New-Zealand lies not only in the infanticide prevalent there, but also probably in the severe manual labour which the women have to perform, and in the hardships connected with their nomadic life. *De Rochebrune* says that miscarriages occur very frequently among the Woloffs, principally on account of the hard life which their women lead and because in addition to their household duties they go on for hours at a stretch crushing millets, a very laborious and fatiguing occupation; they are also in the habit of carousing all through the night when they execute to musical accompaniment exciting and obscene dances of which rotation of the pelvic region is a distinguishing feature.

A certain physical predisposition of such nations to miscarriages must be presumed, for other barbarous tribes suffer very little from them though their women also work very hard, and - during pregnancy too. This is for instance the case among the lower classes in China where women are employed in the very laborious occupation of rowers, whilst the rich Chinese ladies exhibit a great inclination to miscarriages on account of their mode of living; the mutilation of their feet forces them to lead a sedentary life and occasions in them an absence of resistibility. In Persia though the women are in the habit of riding on horseback in the same way as men, even when they are pregnant, natural miscarriage is very rare.

As a cause of miscarriages we may also mention a certain kind of manual treatment which pregnant women undergo among some nations, f. i. the kneading of Mexican women in the 7th month, a special sort of massage employed by the Javanese, similarly the custom of very hot baths as practised in Turkey, etc.

The influence of a strange climate has also been accused of being an occasional cause of miscarriage, perhaps less on account of the high temperature than of the malaria so generally prevalent. Acclimatised individuals are less threatened than new arrivals. Among the natives of Cayenne and Guiana, miscarriage is rare, but it is more frequent among European women who arrive there in a condition of pregnancy or who

become pregnant after a short sojourn. In the Nile countries also European women frequently abort; so they do when living in India during the hot season; the same thing is reported with regard to the tropical parts of Brazil.

Of European women it is generally supposed that Frenchwomen are exceedingly predisposed to miscarriages perhaps because of the frequency with which they bathe and on account of the anomalies which their genital organs present very often.

Premeditated abortion.—It is not correct to regard artificial abortion as a morbid excrescence of civilisation, inasmuch as semi-civilised nations and even many barbarous ones practise it as well. We may conclude from this on the one hand that the unborn child is considered of very little value, and on the other that the danger of abortion to the mother is not thought to be very great.

It is worth mentioning that, according to *Scherzer*, the natives in New-South-Wales are gradually dying off because abortion is so prevalent among them. It is practised by barbarous nations on account of the difficulties connected with the bringing-up of children. The privations and tortures which the native Australian women have to suffer during pregnancy and labour are such that they prefer to avoid the results of pregnancy. Of the female inhabitants of New-Caledonia, Samoa, Tahiti and Hawaii it is reported that they practise abortion for the purpose of preventing their breasts from becoming flabby and lax. In the Malay Archipelago emmenagogues are much in use without causing any lasting inconvenience to the bodies of the women. *Stevens* reports that in one portion of Malakkha abortion is abhorred, and in another generally practised for the purpose of escaping the work caused by the growing child; if a married woman is found out to have induced abortion, her husband is allowed to punish her severely with a club. Infanticide is rare in Borneo because it is anticipated by abortion. "In no country in the world," says *Allan Webb* of Calcutta, "are infanticide and abortion so frequent as in India, and though

the English Government has succeeded in putting a stop to the murder of newly-born children, it is powerless to prevent abortions, which have caused and still cause the death of many a mother." On account of the facility and impunity of artificial abortion there are no illegitimate children in the Orient, but even among the better classes it is no rare thing in Constantinople, *f. i.* for married people to procure abortion when they have already two children, including a boy. A considerable number of African nations practise abortion; thus the Egyptian and Algerian women; there are in Algiers Jewesses who carry on the practice in booths in public places. Whilst a few of the North-American Indian tribes abhor abortion, many others are almost extinct owing to the prevalence of the practice among them.

It is well known that among the whites of North America abortion is very much in vogue, and that especially in the large towns of the United States there are special institutions where girls and women can undergo premature confinement; all American newspapers contain public announcements respecting such places of ill-repute. Women do not see anything immoral in telling casual acquaintances that they did not wish to have any children and that they journey to St. Louis or New Orleans for the purpose of procuring abortion. In Europe also the practice seems to gain in favour. We know at the present time much more about the matter in so far as it relates to numerous foreign countries, than as to what takes place nearer home.

By far the most frequent and most usual cause of abortion is the desire to remove a dishonouring pregnancy; next to it are pecuniary considerations. Fashion also is an important element, as it is with some nations against established custom to have children in the first year or two after marriage, or more than one or two children altogether; there is further the disinclination of the women to undergo the inconvenience of lactation, or the troubles of bringing up children; other causes are jealousy, female vanity and other such defects.

It is therefore seen that abortion is not, as it is frequently maintained, a result of degenerate social conditions such as

constitute the drawbacks of a state of civilisation. The evil is older than civilisation; for the perception that an interference of this kind is wrong makes its way only gradually and slowly in the conscience of a people. It was much later that religious and political legislators endeavoured to combat the destruction of embryonic life by regulations and threats of punishment. The influence of the criminal law however has hitherto not been powerful enough, and those concerned in the matter have devoted far too little attention to an alteration in the social circumstances by which the evil could be removed (*Ploss-Bartels*).

VI

Sexual Hygiene in Married Life

VI

SEXUAL HYGIENE IN MARRIED LIFE

By **Professor P. Fürbringer** (Berlin)

IN dealing, as being a part of the subject of this treatise, with the question how the sexual intercourse of married persons should be exercised in accordance with medical opinion that is in such a manner as not to prove injurious to either partner, this article is intended, in the first instance, to provide the medical profession with a guide for young husbands; husbands, because it is they who are the controllers of the act and who as a rule play the more active part, and young, because those who are no longer so have by experience learned how to correct their early mistakes.

It is clear that where the main object is how to prevent diseases by the avoidance of errors in sexual intercourse, the diseases as such cannot form part of the subject discussed. Hygiene is not medical treatment. I shall therefore confine myself to the consideration of the physiological conditions and of those lighter disturbances which are not yet regarded by the general public of sufficient importance to induce those numerous individuals who are subject to them to seek medical advice. If I include here from a practical point of view the predispositions to disease as well, I can do no more than barely touch occasionally the fringe of the vast range of disease proper, and must refer for further elucidation to the exhaustive articles of the other contributors to this work. Nevertheless—this lies in the nature of the subject—it will hardly be possible to avoid introducing such conditions as nervous diseases, diseases of the genital organs of both sexes, or pregnancy, or entering into the consideration of the hygienic significance of marriage.

In agreement with the view expressed by the senior Editor

of this work under the third heading, with regard to the part played by the sexual intercourse *per se* of married individuals, that is, in the absence of any transmissible disease, there arises, as a special part of the subject, the question as to the manner and frequency of the act of copulation in the normal life of the married persons, and especially during menstruation, pregnancy and child-bed or in other words during the period of involution. Indissolubly connected with this subject is a consideration of the different methods employed to prevent conception, of sexual continency and of some general hygienic measures in so far as they are calculated to serve the interests of a correct sexual intercourse.

The literature on the subject from this point of view is rather scanty, and yet if looked for carefully not quite so poor as it is generally believed. In any case there is no text-book treating of the subject-matter as a whole to serve to medical men as a guide and for reference. Not sufficiently known and appreciated are as yet three lectures by the Swedish author *Ribbing* entitled: "Sexual Hygiene and its ethical consequences"¹ a work full of lofty sentiment dealing with the principal points of the subject in a thorough and worthy manner. Several German authors have also devoted considerable attention to the subject. We will name their works without in any way detracting from the value of other more general observations met with in various writings without any references to literature—and of these there are a great many. I myself have also dealt with various points of the subject in my article "Disturbances in the sexual functions of the male sex."² The fairly comprehensive literature given there has to a great extent been made use of in connection with this contribution, and the experiences laid down on the former occasion will be materially amplified in these pages.

Regulation and performance of sexual intercourse.—Beginning with the technique of the sexual act it is no use denying that the activity of the physician in this

¹*B. Reyher*, Leipsic 1890. (3d edit.)

²*Nothnagel's Spezielle Pathologie und Therapie*, Vol. 19, 3d part, 2d edit. Vienna 1901.

direction is a very limited one indeed. Not very often, "but rather seldom" (*v. Schrenck-Notzing*) is a doctor consulted before the consummation of arranged marriages, and equally rarely does it happen that the husband is a novice in the matter. As a rule he knows "how it is done." It is not my present concern to express an opinion on the moral justification of pre-connubial intercourse or to enter into a discussion on the extent to which public opinion under our present-day civilisation permits or even sanctions the practice. Like *Ribbing*, *Rubner* and other authors I cannot look upon it as a desirable object, and still less as a remedy to be recommended by the practitioner. I shall presently give my reasons for this attitude. Fortunately, moreover, the chaste young man is not absolutely extinct. From observations extending over many years among private patients and also in hospital practice I can testify to this being the case even in Berlin—that metropolis so full of temptations. If one often hears "liaisons" spoken of as something quite natural, in the presence of the parent accompanying the patient, who not infrequently even confesses to having advised the son in that direction, there are still a certain number of inexperienced young men left whose questions to the doctor are downright sincere.

There is always a certain amount of "offensiveness" in the treatment of subjects pertaining to the sexual functions. But it is the duty of the medical man to answer conscientiously and to the best of his ability questions relating to health addressed to him by those seeking his advice and it is even permissible under circumstances to exhibit a certain inquisitiveness into the most intimate details of married life. He is but a poor doctor who cannot make his patient realise that idle curiosity is not a part of his profession! But on the other hand he must also expect occasionally to derive pain and disgust from the revelations made to him at his instigation, though rarely so in the case of newly-wedded female patients. The authoress *Fischer-Dückelmann* is perfectly justified in calling attention to the evil consequences often resulting from a neglect on the part of many male doctors to inquire into the moral side of the married life of their female patients.

Position.—I should not have entered into the question of position during the sexual act of married people if I were not convinced from a perusal of the many contributions on the subject, that what is natural is not always obvious. The hygienic importance of the position in which the act is exercised most easily and most agreeably and which requires least muscular exertion namely the horizontal one with body against body, was already known in most ancient times as we read in the work of *Ploss* and *Bartels*,¹ and this position has been handed down to us by pen and pencil as the one which has always been generally adopted. That it is the woman who occupies the lowermost position may be regarded as symbolical of the lordship of the male sex, of the submission of the weak to the strong, unless we see in it also elements of shelter and protection. And yet natural as it is, this question of position frequently necessitates special words of advice on the part of the physician as I can testify from personal experience, and it behoves us on such occasions to be plainly outspoken. Many a case of so-called male impotency—and I allude here particularly to individuals affected with light psychical ailments, congenital or acquired—is nothing but inhibition depending entirely or to a great extent upon the false modesty and awkwardness of the female partner, and could soon be set right by a proper medical consultation in her presence. And how often do otherwise highly intelligent young husbands confess ignorance as to whether they perform their marital duties in a normal manner? It is under such circumstances the duty of the physician to be prepared to expound the most rational arrangement in candid and suitable words, and even to dwell on the necessity of properly separating the thighs and raising the sacrum. Doubtless a great deal of tact is in such cases required, especially in the presence of female modesty, the more so as the number of virgins contracting matrimony is far greater in proportion than that of chaste young men, not only among the upper classes but also among the lower. I decidedly believe this to be the case although the wife is generally the better informed partner in matters per-

¹Das Weib in der Natur- und Völkerkunde. 4th edit. Leipsic 1895.

taining to the married state and in spite of occasional astonishing confessions. I think it necessary to emphasize the point, as there are many others of a different opinion, and because of the incredible statement publicly made a few years ago by a Berlin theologian which drew upon him a well-merited rebuke.

In addition to the natural position there are quite a number of others which have to a great extent been adopted by both uncivilised and civilised nations but which we cannot regard as normal. This applies to the lateral position, the dorsal position of the man, the *coitus cum uxore inverso*, which may go so far as to imitate the process in animals, that is copulation while standing or sitting. To be quite frank, I can hardly think of any combination which does not figure among my case-notes as having been practised by my patients. It is in such cases difficult to draw the line between harmless and transient indiscretions of newly-married people and the subtle contrivances of the sensualist. While it is of course the bounden duty of the physician to condemn the latter emphatically not only on moral grounds but also on account of the mechanical injuries which they are apt to cause and of which we shall speak again later on, there are occasionally circumstances which render a departure from the normal procedure permissible and even medically advisable. I am thinking f. i. of the case where it is necessary to protect a delicate and sensitive wife from the ponderous weight of a corpulent husband.¹ I shall return to this point when discussing the question of intercourse during pregnancy. But there may also be a pathological sensitiveness present in the wife consequent on morbid processes in the pelvic or abdominal organs which makes it imperative to prescribe a method of connexion that would entail no pressure—provided, of course that it is not necessary to forbid intercourse altogether. In this connection I must also mention briefly the attitude of the physician with regard to the reflux of the semen from the vagina

¹It is evident that when both husband and wife have large abdomens, there are mechanical obstacles against the normal performance of the act, and abnormal positions such as *coitus a posteriori* and others are necessarily resorted to. As a rule however, the doctor is not consulted in such cases.

after intercourse, as a cause of absence of conception, a condition described by *P. Müller*,¹ *Hegar*, *Kaltenbach* and other gynecologists. Apart from operative measures there arise as suitable precautions, the dorso-coccygeal position of the wife so as to tilt the vagina backwards, the raising upwards of the abdominal walls in order to aspirate the semen, the retaining of the penis in the vagina for some time until the relaxation of the excited pelvic musculature, the throwing of one thigh over the other after the removal of the penis, the substitution for the latter procedure of closing the vagina with the fingers—not a very agreeable operation, etc. Finally we are compelled for practical reasons to acquiesce in the assumption of abnormal positions during the act in the not very infrequent abortive forms of relative impotency when they render possible the performance of marital intercourse. The provisions indicated for the exercise of sexual connexion on the part of individuals affected with severer forms of impotency or perverse sexual sensations do not belong to this chapter. It is sufficient here on the one hand to warn medical men against placing too much reliance on the assurance of their patients that they will undoubtedly benefit by giving way to their voluptuous and cynical phantasy, and on the other to impress upon them the necessity of retaining their sound judgment with respect to the unfounded fear that serious diseases are apt to result from the exercise of the sexual act in abnormal positions. I do not forget that many medical men entertain the belief that severe diseases of the spinal cord are particularly likely to be caused by the performance of sexual connection in the standing position.

Avoidance of force.—It is also necessary that the sexual act shall take place without the application of force. This injunction is very much offended against especially by brutal husbands and also by such men whose rough nature does not enable them to appreciate the greater sensitiveness and finer structure of the female organism. What disastrous effects the membrum virile in its erected state is capable of, if used impetuously, we can see from the no longer sparse authentic reports

¹Die Unfruchtbarkeit der Ehe. Stuttgart, 1885.

quoted chiefly in the Manuals on Medical Jurisprudence and known hardly well enough by the medical profession. In more than a dozen cases death through hæmorrhage was caused by severe injury to different parts of the vagina and to the clitoris; in the often quoted case of *Albert*, a sixteen-year-old Arab had in natural intercourse among other injuries lacerated the vagina of his very young and not yet marriageable wife so completely that it communicated with the abdominal cavity. A few years ago a pregnant working-woman aged 26 was brought dead to the hospital with which I am connected. She had suddenly collapsed bleeding after intercourse in the standing position with the young man to whom she was engaged to be married and who was of the same age. They were both drunk. The autopsy (*v. Hansemann*) revealed a laceration of the urinary meatus and of one of the corpora cavernosa of the clitoris. *Wichmann* who reported the case rightly concluded that the membrum must have taken a wrong course and overcome the resistance above the introitus by the creation of a false passage.

While injury to the male genital organs in consequence of intercourse is exceedingly rare, such sad accidents as those described above are fortunately also exceptional and to a great extent dependent upon concurrent special circumstances, f. i. extreme youth or old age, pregnancy, child-bed, pathological conditions of the genitals, inappropriate position during intercourse, excessive size of the penis, intoxication, etc. But even the so-called normal perforation of the hymen may prove highly injurious inasmuch as it may cause profuse hæmorrhage or inflammatory conditions, especially where a certain amount of force is needed to rupture a somewhat resistant membrane or where intercourse has been resumed before the injury has had time to heal up.¹ I am perfectly satisfied that the number of young married women who have a lasting painful recollection of their first sexual intercourse exceeds by far the number of those who venture to consult a doctor, whereas it but rarely

¹In some countries, f. i. China, India, South America, the hymen is ruptured by the mothers or nurses of the children at a very early age, not so much for the sake of cleanliness as for the purpose of preparing them for the sexual function.—*Ploss-Bartels*.

happens that even very sensitive husbands suffer more than temporary inconvenience from slight superficial abrasions on the penis as a consequence of their exertions in the first days of their married life. I should consider in such cases a careful digital rupture of the hymen the lesser of two evils. It is true that only a husband who is himself a medical man would adopt this procedure, otherwise it will hardly be possible to do anything else but perform an incision as the quickest and the easiest method. Further measures as well as the treatment necessary in cases of vaginismus which by the bye must not be confused with the vaginal hyperæsthesia (*Olshausen*) so frequently seen in young married women, will be found in the chapters on nervous diseases and on diseases of women. But even under normal conditions, where both husband and wife are in perfect health, it is incumbent on the gentle-mannered husband, as *Ribbing* says, to pay every consideration to the tender feelings of his wife; he must endeavour to use that discretion for which Shakespeare's Imogen begs so diffidently from her husband Posthumus. Very true are the remarks with regard to sexual trauma in the work of *Breuer* and *Freud* on hysteria: The nuptial injury to the newly married woman may be the result of mental anxiety mixed with a fear of something unknown, some foreboding of evil. As experience has frequently taught me even a well-beloved husband is capable of inflicting deep and lasting wounds to the feelings of his young wife, if he does not know how to restrain himself in the first night after the marriage.

Time of intercourse.—As regards the time when sexual intercourse is best exercised it would appear that the hour chosen almost instinctively by the majority of people, namely the evening or the time of going to bed, is hygienically correct, if only on account of the necessary undressing and of the fatigue succeeding the act. That the latter is as a rule productive in the man of higher—and even forceful—degrees of somnolence than in the woman may be regarded as an established fact.¹ This

¹Translator's note. On this point I am rather inclined to disagree with the author.

agrees moreover with the greater amount of activity on the part of the male partner during the act, and with the more intense pleasurable excitement which he experiences.¹ Though the degree of orgasm is different in different individuals and dependent upon disposition and temperament—there are numerous possible intermediate stages between a pleasurable feeling of contentment and frantic voluptuousness—it is very seldom indeed that the sudden engorgement and the still more rapid relaxation after ejaculation are absent in any marked degree.² This relaxing effect possesses under physiological conditions a feeling of fitness but is decidedly antagonistic to the desire for work. I must insist upon this opinion which is contrary to recent utterances on the subject. Nevertheless there are occasionally married couples who choose the morning time, and others who prefer the after-dinner hour, or the time after their principal meal. In the one case it is probably the renewed vigour after a long sleep, in the other an increased desire through food and drink and especially alcoholic liquors

¹According to Gutzzeit as many as 4 out of every 10 women do not experience any sensation in sexual intercourse. *O. Adler* who has treated of the *Anæsthesia sexualis feminarum* or "Dyspareunia" (*Kisch*) in a special work which has just appeared (Berlin 1904) is inclined to agree with this opinion. Though I am prepared to accept the statement that total and partial anæsthesia is exceedingly frequent in women, as it is so very difficult to obtain reliable statistics on the point, I cannot, judging from my experience, allow the above figure (40%!) to pass unless we include the lightest forms of female anaphrodisia. Whether it is true that under some circumstances coitus a posteriori is therapeutically indicated in order to excite sufficiently certain parts, I am not in a position to say. It is however strange that a very recent pamphlet on the sexual sensation in woman and man from the pen of a lady, *J. Elberskirchen*, insists on the equality of the female desire and demands free satisfaction of the same within physiological limits. What has so far been established by statistics does not seem enough to justify the suppression of the wish for further enlightenment on the subject.

²According to *von Krafft-Ebing* the orgasm in woman both appears and disappears more slowly than in man. *Adler* gives two different charts, one with an acute angle, the other with an obtuse, which he associates with dyspareunia. Where the husband does not accommodate himself accordingly out of consideration to the wife the latter does not miss anything or else completes the act manually. I know a large number of similar cases, but deviations from these charts and from their conclusions are probably more frequent.

which is the determining factor. As a matter of fact I have occasionally in cases where proper erection was not obtainable in the evening, like *Rohleder*,¹ recommended with success a change to other times of the day. As a rule however the physician should in my opinion oppose such practices as they are likely to grow into a habit, especially where heavy meals come into consideration. The reason is to be found in the above remarks to which we ought to add the danger of serious accidents in the case of elderly people, particularly where there is an inclination to arteriosclerosis (apoplexy). There is also some risk of gastric and intestinal troubles in the exercise of the sexual act immediately after a meal (*Féré*), while *Curschmann*² and *Löwenfeld*³ are distinctly opposed to all exertion after the act as being highly weakening. Finally, sexual intercourse during intoxication, to the dangers of which with respect to injuries I have already referred, is according to *Donner*, on account of the prolongation of the act, equal in its effect to that of excess. Sexual intercourse should never take place in tight-fitting clothes.

For the rest I am not in a position to lay down any definite practical rules with regard to the choice of time, particularly in respect of a sexual periodicity such as *Havelock Ellis*⁴ is inclined to adopt from comparison with the habits of male and female masturbators. Though certain individuals do occasionally exhibit within physiological limits a certain regularity in the fluctuation of their sexual desire, it does not seem proper to speak of weekly cycles and monthly crises. For it is just this characteristic differential quality which distinguishes man from animals. Whereas nature has in the case of many of the latter ordained that the powerful sexual desire which is necessary for the continuation of the species shall recur periodically (rut), she has been so generous to the former as to provide him with a continuous sexual ability for the whole of his sexual life.

¹Ueber Sexualtrieb und Sexualleben des Menschen. 2d edit. Berlin 1902

²Die functionellen Störungen der Männlichen Genitalien. v. *Ziemssen's* Handbuch d. spez. Pathol. u. Ther. IX. 2. 1878

³Sexualleben und Nierenleiden. 3d edit. Wiesbaden 1903.

⁴Geschlechtstrieb und Schamgefühl. *Kötscher*. 2d edit. Leipsic, 1901.

This is also shown by the superior sexual activity of the man over that of the woman, and it is only the masturbator with his practically unlimited opportunities to satisfy his craving who is better off with regard to a fixed time. But just because it is so, just because the husband may choose the time and hour at his pleasure and just because he is the one that receives as a rule more enjoyment from the sexual intercourse, but also because the connubial state interests two individuals, I am inclined to agree with *Ribbing* that it is not right for one of these individuals to decide alone the common affairs of the partnership. The considerate husband is received quite differently in the nuptial bed than the brutal egotist. On the other hand it is to be remembered that refusal to fulfil one's conjugal obligations constitutes in some countries one of the grounds for divorce. The conduct of the husband during menstruation and pregnancy will be discussed more fully later on.

Frequency of sexual intercourse.—More difficult to decide than the points considered so far is the question as to how often the sexual act should be exercised. In this connection we have for guidance a number of ancient legislative enactments. *Zoroaster*, *Solon* and *Mohammed* prescribe under normal circumstances three to four connubial embraces in a month. The Talmud differentiates in its injunctions according to the social position and vocation of the individual; the well-to-do and strong young man who is not engaged in any laborious work is required to fulfil his marital duty every day, whereas artisans, workmen and scholars being busy men and having exacting work to perform, should not be called upon more than once or twice a week and ought even to be permitted occasional long pauses, lasting one or more months. Luther's dictum "Die Woche zwier" (twice a week) is well-known both to doctors and laymen. In modern times such numerical prescriptions have to a great extent fallen into disuse, probably because it has been recognised more and more that even within physiological limits the sexual ability of individuals differs very much, and that it is exceedingly difficult to draw the line between normality and abuse. Though this law has been advocated most convincingly by such experts as *Curschmann*, *Erb*, *v.*

Gyurgovechky,¹ *Eulenburg*,² *Löwenfeld* and others, it has been my endeavour, having come across all kinds of possible intermediate degrees between indefatigable insatiety³ and extreme moderateness, to point out that even in the same individual the normal sexual potency fluctuates within wide boundaries. Nevertheless I am of the opinion that the extraordinary deviations from the average form the exception—even *Mantegazza* speaks of his "grandi amatori" as rarities—and that a numerical rule for the average man is not to be regarded quite as "ridiculous." *Ribbing* says: "It would be better for many a marriage if such a rule were generally adopted." To reject a number altogether because it does not apply to everybody would be regrettable both from the point of view of the doctor as well as from that of the patients seeking his advice. There must be some guiding general principle unless we wish to leave the matter entirely to the decision of each individual and to let every one find out for himself what he should do, on the basis of "experientia docet." Although the errors of youthful

¹Pathologie und Therapie der männlichen Impotenz. 2d edit. Vienna and Leipsic 1897.

²Sexuale Neuropathie, Genitale Neurosen und Neuropsychosen der Männer und Frauen. Leipsic 1895.

³We have an example of a real Don Juan in Nero (and his counter-part Messalina), who, like the legendary Tannhäuser, can hardly be regarded as a non-existent phantom. There have been many who have been capable with impunity of ten times the amount allowed by Luther (*Erb*). *Trousseau* mentions tabetics who could perform the act eight to ten times in one day or night. *Löwenfeld* has reported of even more in healthy individuals. A gentleman 54 years of age, has to my knowledge had sexual intercourse with his wife on an average twice daily for many years though an examination revealed diabetes. A merchant of the same age had (adulterous) connection no less than fifteen times in three consecutive days without any marked inconvenience. Finally a young Russian confessed to me that in the first years of his married life he had connection with his wife every night three or four times, without feeling in any way the worse. The orgies of young married couples on their honeymoon are sometimes past all description, and yet they do not necessarily lead to any ill results. The translator would like to add to these experiences a case from his own practice, and that is, a man about 36 years old, married now some 10 years, who in spite of (or perhaps on account of?) chronic gonorrhœa is able to have frequent connection with his wife, often as much as 4 or 5 times in one night. He is not by any means a robust man, and probably tuberculously inclined. Perhaps the last-mentioned circumstance is not without its significance.

orgies and the consequences of excesses in the happy early years of marriage often correct themselves after a time, there are still a considerable number of cases left in which the observing eye of the physician may detect impending or accomplished trouble and advise accordingly. I have too often had occasion to explain to guileless young couples the connection between cause and effect to allow myself to rest satisfied with a policy of "*laissez faire*," and to place my reliance on individual discretion and self-control. The choice between a numerical rule and guidance by one's subjective feeling post coitum is often anticipated by serious mischief, and for this reason I have for many years unhesitatingly recommended under anything like "normal" circumstances—and it is the duty of the medical man to find these out—50 to 100 single acts in the course of a year as a hygienic precaution. This limitation which takes into account the menstruating periods—but not of course, pregnancy, long absence of either husband or wife, or more or less chronic diseases, etc.—leaves sufficient room for the fluctuations due to various external causes as well as to different physical and psychical conditions; it is also, apart from the older regulations discussed above, in fairly complete accord with the rule laid down by *Ribbing* (under perfectly normal circumstances, and between the natural interruptions, about 3 or 4 times a week); and it is not grossly contradictory to the expert *Acton's* suggestion of a weekly turn in the case of jaded town-dwellers. It is finally in agreement with one's notion of true moderateness and rather more reasonable than the over-carefulness of the philistine. The sexual ability as the manifestation of an "*appetitus coeundi*" has not unaptly been compared to the gastric and intestinal functions. We find this comparison first expressed by *Beard* and *Rockwell*¹ in a due appreciation of the relative ideas. Undoubtedly the man with a robust digestive apparatus can afford to laugh at the individual who in spite of a healthy appetite is obliged to adhere to a strict diet; but what these authors have omitted to take into consideration is that in eating and drinking it is also necessary

¹*Sexual Neurasthenia, its Hygiene, Etiology, Symptomatology and Treatment.* 2nd edition.

to be careful and to avoid excesses. For this reason I am in the habit of answering in the negative all questions as to the advisability of immediate repetition of marital intercourse just as I am opposed to the practice of double meals as being a non-hygienic procedure. But for all that I do not believe in undue pedantry. Occasional outbursts of exuberance when in full possession of the vital powers are not generally of any consequence especially in the case of young married couples who enjoy life and have no worries to weaken them. It is of course different where, as it frequently happens, May has wedded December and where the old man notices that his young bride does not want to be "spared."¹ The busy doctor often hears complaints on this score from the female partners as well. He will do well in such cases to recommend as a precaution against premature senile impotency the regular performance of the marital duty, even if the desire is not very strong, so "as to keep in practice." I heard once this opinion confirmed unanimously by a company of elderly brother-practitioners, when I happened to be a secret listener. Fortunately there are among women plenty of frigid natures.

Consequences of sexual excess.—The consideration of the concrete forms of the injury to health caused by excess of connubial intercourse, both absolute and relative, is outside my present task and I must refer the reader to the special chapters of this work in which experienced specialists, neurologists, and gynæcologists treat of the different subjects in this connection. Personally I have for many years devoted considerable attention to the question and will here only summarise that in definition of sexual neurasthenia I have, in spite of my unshaken belief in the predominance of a nervous predisposition, attached a very important ætiological part to

¹In my opinion the decisive turn in a man's life falls on an average in the sixth decade, or possibly in the middle of the fifth, though it is by no means a rare thing to come across men of over 60 who are perfectly potent. It would not be amiss if the legislature which recognises a minimum marriageable age would take into consideration this aspect of the matter as well, especially in view of the circumstance that there are always a large number of old men on the look-out for young wives. Often enough the health of these people suffers objectively, a fact pointed out by *Lowenfeld* and others.

sexual injuries. It is here where sexual mismanagement shows its characteristic results. The excessive natural coitus is in this respect certainly far behind masturbation with its devastating effects—almost all authors agree upon this point—and the experienced practitioner will in principle share the view of *Curschmann* that marriage directs the unbridled passions into the right channel. But serious consequences of extravagant nuptial intercourse are by no means unknown, and it is principally the husband who is by nature more sensually and passionately inclined that suffers from them to a greater extent than the wife whose nervous system is far less affected by the sexual act; even if we ignore entirely for the moment impotency and spermatorrhœa. This explains how it happens sometimes that while the husband becomes after marriage more and more miserable the wife becomes more and more healthy-looking. (*Löwenfeld*.) Even individuals formerly in the best of health may pay heavy tribute to the too frequent marital intercourse in the shape of typical neurasthenia. Thus *Binswanger*¹ was able to demonstrate connubial excess in very young or very old married persons as the only cause of neurosis; and *Eulenburg* has seen sexual neurasthenia as an immediate consequence of highly exhausting venereal orgies. Though in the majority of cases the ill-effects disappear more or less completely, there remain occasionally, especially in newly-married individuals, most serious disturbances of a permanent nature as a result of sexual abuse. I must in this respect agree with the opinion of *Löwenfeld*.²

Conduct during menstruation.—How should married people conduct themselves during menstruation? This question has received but little consideration in scientific litera-

¹Die Pathologie u. Therapie d. Neurasthenie. Jena 1896.

²In a case observed by *Hammond* a young man developed as a penalty for having executed the sexual act eleven times within eight hours—only the first three times with ejaculation—immediate and rapid epilepsy, and permanent impotency. The paralysis of the lower extremities which the writer saw in a woman under similar circumstances was probably hysterical. Into the debate whether excessive intercourse is capable of producing in both sexes more or less permanent inflammatory conditions or in other words organic troubles I cannot enter here.

ture. Perhaps because it was thought self-evident that no man would come near his wife while she is menstruating. The Mosaic law goes even so far as to speak of capital punishment in connection with the matter and though it may not be proved that such punishment was ever carried out it is plain as we read in *Ploss* and *Bartels* work that the menstruating woman has always been and still is to some extent considered as unclean. According to the law-book of the Mohammedans the husband who has connection with his wife while she is menstruating loses the faculty of mental repose. The menstruating woman occasions also other troubles, endangers vegetation, etc. Hence the regulation among several nations commanding women to undergo a definite purifying process after the cessation of menstruation.

But there are in my opinion besides the belief in the injuriousness of sexual intercourse during menstruation, which acts in many parts as the only deterrent, other reasons as well why cohabitation should be suspended during the periods. There is, primarily, the hurt to the æsthetic feelings in the presence of disagreeable often malodorous coagula adherent to the genitals. More important still is the necessity of sparing the female organs at a time when they are as a rule subject to increased sensitiveness and diminished resistibility. How little consideration many individuals show in this respect I can tell from a good many confessions made to me by sensual men who have during menstruation sexually treated their wives not much differently than at other times. I have no hesitation from the hygienic point of view in declaring intercourse during menstruation as generally unpermissible even if the continence necessitated by this injunction should extend over periods as long as a fortnight or in other words over the half of the sexual interval.¹ It must not be inferred however that I regard it as a calamity if, as it often occurs, intercourse happens

¹Without regard to the still debated point whether the sexual instinct of healthy women is more pronounced during or shortly before and after menstruation or if modesty prevents them from owing to it. (*Ellis*, v. *Krafft-Ebing*.) That menstruation in women must not be compared to the rut of animals has already been mentioned.

unknowingly to take place simultaneously with the commencement of a period or if a period which is considered to be at an end is resuscitated by a sexual act. The less so as the interesting controversy whether menstrual blood can act injuriously on the male urethra is probably in spite of opinions to the contrary decided in the negative. My own experience that what we meet with in such cases are no more than harmless and insignificant complaints arising from a non-virulent urethritis, is in accord with the opinions of various gynæcologists and urologists. Thus *v. Zeissl*, *Sims* and *Finger*¹ emphasise particularly the disinclination of mucous pseudo-gonorrhœas resulting from intercourse with menstruating or leucorrhœic women to assume any chronic forms or further development.

Conduct during pregnancy.—The sexual hygiene of the married state during pregnancy which if noticed at all receives but scanty consideration in text-books and manuals, is not less important than that during menstruation. On the contrary, it deserves even greater attention seeing that on account of the much longer duration of the period in question there is a correspondingly greater danger of undesirable conduct on the part of the husband arising from the enforced continence. A new element of risk is moreover introduced in the shape of miscarriage which is a source of peril to the health of the mother and to the life of the fœtus though there is perhaps a certain exaggeration in connection with the subject. The want of unanimity in the opinions on the matter is apparent on the one hand from *Kleinwaechter's* demand that intercourse shall be restricted and in the second half of the pregnancy

¹*Finger* demonstrates in his well-known work "Blenorrhœe der Sexual-Organen" (5th edit. Leipsic Vienna 1901) peculiar bacilli enclosed in round cells as the possible cause of the mucous discharge. *Bockhart* and *L. Casper* also believe in a bacterial origin ("Bacteriorrhœa"). The occasional chronicity observed by *Diday* and *Lyon* is probably as *Raciborski* truly says due also to other causes. What I have seen in connection with intercourse during menstruation and with women suffering from non-virulent catarrh have always been acute processes. Often enough there is nothing else noticeable but a few transparent filaments in the urine which occasions very little inconvenience, a condition resembling that which is often caused by frequent sexual intercourse. Where there is no gonococcus there can be no danger in this respect.

abstained from altogether, and on the other from the suggestion which *E. Fraenkel* makes in his recently published book "*Hygiene des Weibes*" (*The Hygiene of Woman*) Berlin 1903, that there ought to be no connection between husband and wife during the last few weeks of pregnancy on account of the danger of introducing into the vagina micro-organisms likely to lead to inflammatory troubles. These are enormous differences which it is difficult to reconcile and against which I am not in a position to advance a definite proposal. I consider however, to be brief on the point, that an abstinence during the whole second half of the period of pregnancy is likely to be to some husbands a very serious matter and one involving the happiness of many a married couple. For this reason I have made it a rule to advise my patients under ordinary circumstances to abstain from intercourse entirely beginning with the sixth or seventh month. This restriction of which libidinous husbands will often enough take no notice leaves in my opinion sufficient room for individualistic dispositions to assert themselves where particular conditions of ill-health do not necessitate a different conduct. With this part of the subject however I am not dealing now as it does not belong to the present chapter. A predisposition to miscarriage may at times form an absolute prohibition. That intercourse during pregnancy is, as regards man, not to be looked upon under all circumstances as an unnatural proceeding is admitted even by *Ribbing* who is otherwise so very cautious. But he advises very great care and especially so in the case of first pregnancies. This means in my opinion not only a restricted number of single acts but also a more gentle and careful manner of performing each one. Referring to what has been said above I should like to mention here that in advanced pregnancy people often adopt for intercourse the lateral position without taking first the doctor's advice.¹ In con-

¹ Usually it is done with the wife sitting somewhat elevated. The doctor need not regard this position which approximates connection in the lateral position as impermissible, considering the exceptional care which should be taken not to subject the pregnant abdomen to

trast to this cautiousness and consideration for the wife I wish to call attention to the brutal habit of some husbands—"unfortunately very frequent" (*Hegar*)—who make voluptuous use of their pregnant wives in the usual way up to shortly before their confinement. How different were the customs of various ancient nations! The Persians *i. e.* prohibited sexual intercourse with the pregnant wife under penalty of corporal punishment. The Talmud also declares copulation in the first 3 months after conception as deleterious both to the pregnant woman and the fœtus, and later intercourse is characterised as an action which is destructive of human life. In China total abstinence is one of the first medical laws (*Ploss and Bartels*). In many places pregnancy is like menstruation looked upon as a state of uncleanness requiring separate accommodation. Finally it is worth mentioning that to some sensitive and "æsthetic" natures (as I can testify from personal experience) the roomy secreting vagina and the œdematous vulva are in themselves sufficient to deter them from cohabiting with their pregnant wives. As regards the acquisition of urethritis in consequence of intercourse with the pregnant wife (*v. Zeissl* and others) the same may be said as with regard to connection during menstruation.

If I do not see any objection to allowing my patients under ordinary circumstances to cohabit with the pregnant wife beyond the middle of the period of pregnancy it is as I have already indicated principally on account of the attitude some husbands would adopt if compelled to abstain for too long from sexual intercourse. The "concession" is the more reasonable as in accordance with the advice I am in the habit of giving with reference to the abstention during the period of involution the time of continence extends over several months. So as to make it clear what such a long continued absence signifies and in order that it may be appreciated fully I consider it advisable to give here a brief summary of the much discussed question of the "consequences of sexual continence" and of the many contradictory opinions concerning the

¹Der Geschlechtstrieb. Stuttgart 1894.

same, while referring for further details to my several other contributions on the subject.

Sexual abstinence.—I have now for a number of years on the strength of personal observations, which are no longer limited in number, and at the risk of being regarded as a sermoniser opposed most strenuously the belief in the injuriousness of sexual continence which was inaugurated chiefly by the teaching of *Lallemand* and is unfortunately still very prevalent among doctors and the public. Many eminent men are at the present time in agreement with me and I have only to mention such names as *Ribbing*, *Hegar*, *Eulenburg*, *Loewenfeld* and *Rohleder*—all these authorities have dealt with this interesting subject most minutely¹—to demonstrate the progress of the principle that the control of the sexual desire within wide limits is not only permissible but even necessary from the hygienic standpoint, in spite of its being admittedly a powerful natural impulse. There are of course gradations. One case may require the declaration that absolute suppression of the desire is a harmless measure, that so-called “diseases of abstinence” are invented, though readily believed and thoughtlessly repeated, stories (*Ribbing*, *Eulenburg*), another the mere refusal to attribute to abstinence the causation of more or less serious disorders. (*Löwenfeld*.) Personally I have always listened skeptically to the tales of my patients assigning all sorts of conditions such as spermatorrhœa, impotence, neurasthenia, hysteria, hypochondriasis,

¹*Curschmann, Forel, Mendel, Hoerschelmann, Blessig, Masing, Assmuth, Jos. Mayer, Hersen*, and many others have also worthily participated in establishing the true hygienic conclusions demanded by science and morality. I may also call here attention to the recent order from the Prussian Minister of Education to the Directors of the Universities requiring them to warn the students against the dangers from venereal diseases, considering that a step is thereby taken in the direction of having the subject elucidated by experts from the ethical point of view. The instruction of young men on the subject of illegitimate sexual intercourse and of its dangers is one of the finest and most beneficent objects of medical societies. In a “warning” issued by the “German Society for the Prevention of Venereal Diseases,” which has just reached me I read in the first paragraph that sexual continence is in the unanimous opinion of the medical profession generally, not injurious to health, as it is commonly believed. This applies to women also. *B. Kroenig* and others.

to their sexual abstention exclusively, and I can hardly remember a single case of a healthy individual in whom I could discover no other cause but continence for conditions of ill-health. People do occasionally complain of discomfort, of a feeling of pressure or of tension ("spermatic impulse"); but these inconveniences are easily overcome and without masturbatory "correction." It must be admitted however that there are some sensually inclined and neuropathically predisposed persons whose history does contain serious symptoms of sexual neurasthenia.¹ But I think it necessary to emphasize that the medical practitioner should not in the presence of such patients give way to useless over-confidence. Often enough it is not the continence which is responsible for the illness, but masturbation and lasciviousness, though not to such an enormous extent as is assumed by *v. Gyurkovechky*. The self-regulating action of normal emissions—a subject which is in my opinion far too little appreciated in medical literature—should also be borne in mind. Finally, as *Hegar* says, the sexual desire in present-day civilised people, and especially in women, is not by any means as intense as it is described. Let the reader note the courageous struggle of this expert against the pernicious doctrine of *Bebel* that it is dangerous to suppress natural desires and that it is ordained that man should not leave unused any portion of his body or resist the gratification of natural require-

¹I am obliged to recognise that the literature on the subject does include comparatively reliable cases of serious mischief resulting from continence (thus one fully reported by *L. Casper* of *ejaculatio ante portas*) and that highly authoritative experts such as *v. Krafft-Ebing* (*Psychopathia sexualis*, 12th edit. Stuttgart, 1903) and *v. Schrenck-Notzing* (*Die Suggestionstherapie bei Krankhaften Erscheinungen des Geschlechtssinnes*, Stuttgart, 1892) believe in continence as a cause of serious affections and even of sexual perversity. But I look upon such cases as exceptions confirming the rule. And as to "diseases of abstinence" in women, even *Krafft-Ebing* considers them a myth. As a matter of fact those times have long since gone when "old-maidhood" and its peculiar disturbances used to be ascribed to absence of sexual intercourse. Neither does it appear that celibates and others who are vowed to chastity are more prone to neurasthenia. The platonic love of adolescence may be an "absurdity," but, as *Moll* says (*Die conträre Sexualempfindung*, 3d edit., Berlin, 1899, and *Untersuchungen über die Libido sexualis*, Berlin, 1897) it is just capable of conquering the "detumescent" desire which is the more serious part of the sexual instinct.

ments. I cannot allow a comparison between the sexual desire and the above indicated natural instincts of hunger and thirst, such as is often made, because food and drink are vital necessities under any circumstances. If the parallel is to be continued, there is perhaps more justification in a reference to drunkenness and to the struggle against the abuse of alcoholic liquors.

On the whole, while not exactly of the opinion that disorders due to continence are entirely non-existent, I have no hesitation in agreeing with *Curschmann* that genuine cases are very rare. Where such are credibly alleged, artificial irritation must be supposed to play a very important causative part in the majority of them. As to the rest, "it is possible for sexually normal individuals whose resistibility is not diminished by sexual abuse, to endure permanent continence along with a well-regulated mode of life without any ill-effects that are worth mentioning." (*Löwenfeld*.)

This explains why, in spite of occasional "conflicts of duties" (*Stintzing*) I have never dared to recommend sexual intercourse to young men and also why I oppose so emphatically the "connection cure" advised by other medical men, advice which *Rohleder* characterises as unscrupulous.

In returning after this digression to the subject of the sexual hygiene of married persons during pregnancy I repeat that the medical demand of abstinence during part of the period is, after what has just been said, the more reasonable as it is only relative continence which comes into consideration.¹ Of course we must not forget that there is an aggravating element in the matter, namely the former regular performance of the sexual act and the fact established by experience that sexual abstinence, when compulsory, is more difficult of practical realisation than when self-imposed or voluntary. (*Rohleder*.) The above mentioned exceptions are doubtless seen by practitioners to a great extent after sudden dissolutions of marriages through the death of husband or wife especially

¹ I wish to mention the prohibition of intercourse in various forms of disordered potency, where prolonged continence, extending over one or more months may be remarkably beneficial.

where there is increased sensual proclivity and associated with it a corresponding sexual faculty. On the other hand there are cases, as I have often been told and not only by elderly couples, where the conjugal intercourse has for years been restricted to an unusual or even unseemly degree. But while there is no difficulty about these cases, in the others the doctor must be prepared to grapple with the hard task of compulsory continence, though the latter is to be a temporary one only. Much may be done in this respect by the occupation of separate bedrooms, and by increased mental and physical work on the part of the husband.

There remain however, even if the cessation of intercourse during pregnancy is permitted to be postponed in the sense of my concession, not a few cases—and this is the sore point in the whole question—where obedience to the doctor leads to the adoption of devious ways. Having had occasion for many years to see what is going on behind the scenes, I may say that of the tragedies not infrequently met with by the practitioner as results of an unrestrained sexual nisus those oftenest seen are: secret adultery on the part of the husband, masturbation and onanism performed by the wife on the husband. I do not believe however that the wife, whose occasional inclination to self-help where the husband denies her even a reasonable amount of gratification I am not prepared to deny, ever gives way to masturbation while in a pregnant condition. She rather tends to be grateful to the husband for the forbearance with which he treats her. As to the attitude of the practitioner with regard to the question of the gratification of the husband's desire elsewhere, I should not waste any words on the matter if I had not absolute proofs of the laxity of some doctors on this score. I pity the medical man who does not at all times remember the great significance of adultery, an offence neither required by hygiene nor sanctioned by society and which, is moreover in some countries punished with imprisonment. For the rest, I consider the other aids mentioned above also reprehensible, but where the dilemma is otherwise insolvable they are to be regarded as the lesser of two evils, though every effort must be made to check them.

It is better to permit natural intercourse even in highly advanced pregnancy, rather than a deviation from the correct attitude.

Conduct during the period of involution.—In view of the above remarks it is not necessary to say very much on the sexual conduct rendered hygienically imperative by the puerperal condition. I do not of course mean here child-bed in the sense generally attributed to the word by the laity, that is the average week or two spent by the puerperal woman in bed, though according to *Hegar* even during this short period "beastly transgressions" do occur. I mean a period of involution extending approximately over 6 weeks, though it certainly cannot be said that it is absolutely necessary in every case to wait so long—that is, not only until there is no sign left of the lochia but until the wife is able to resume her former mode of life—before intercourse may be indulged again. A great deal depends on such fluctuating factors—easily influenced by the sexual act—as lactation, the involution of the genital organs, or the whole constitution of the mother with its eventual new duties necessitating greater cautiousness. Referring to what I said above on the conflict of the indications I do not see anything objectionable or unhygienic in the doctor's permission where favourable circumstances warrant it, to resume the marital relations one or more weeks earlier.

There are no special instructions necessary with regard to conjugal connection after miscarriage, in view of what has already been said. They are easily inferred from the contents of my detailed remarks on pregnancy and menstruation. As to more serious pathological conditions, their consideration is beyond the scope of the present chapter.

Preventive measures.—The preventive intercourse of married couples in relation to sexual hygiene, especially as practised at the present day, makes great demands upon the attention of the medical practitioner. This is not the place to prove its justification. Suffice it to say that if we cast a glance at the married state in its different aspects as one of the factors concerned in the progress of a nation, if we bear

in mind the prolonged period during which woman retains her conceptive faculty, if we think of the widely fluctuating uncertainty as to the consequences of normal cohabitation with respect to the question of offspring, and if we also take into consideration what has been minutely dealt with in these pages, it is impossible to issue a general prohibition. This does not however imply complete indifference to the interests of the State which requires a constantly increasing population on the basis of legitimate marriages. It does not mean a refusal to recognise the dangers associated with an exaggerated adoption of neo-malthusian principles. Let me at once say that so far as I am concerned I share at present the views expressed more than 20 years ago by *Hasse* (alias *Mensinga*) in his researches on optional sterility, and those of the Munich neurologist *Löwenfeld* who has recently thrown so much light on the subject. "I claim for every medical man who is a true friend and counsellor to his patients, the inalienable right and duty to utilise his own personal observation and conscientious knowledge with a view to fixing the limit of procreation in every given case, and to act accordingly." "Malthusian measures become a necessity sooner or later to every married couple where the wife retains her conceptive faculty and the husband does not consider that he has an incontestable right to gratify brutally his sensual desires without regard to the weal and woe of his partner and of the children already born." More or less similar opinions are held by *Hegar*, *Eulenburg*, *Rohleder*, *Stille*, *Freud*, *Thompson*, *Folkmann*, *von Oefele*, *Ferdy* and many others. I do not propose however to go into the question whether the increase in the artificial prevention of conception is to be regarded as a "sign of decadence" or rather as an "uplifting of the level of our moral decay."

That the safest remedy, one which never fails, namely absolute sexual continence during the whole of married life, is out of the question I need not dwell upon.¹ We have there-

¹Besides refusal on the part of the husband, who is the more interested party, and besides such untoward results as onanism and adultery, the unsatisfied longing of the wife for normal intercourse also deserves mentioning in this connection.

the orgasm equal to that of normal intercourse, particularly where there is "a little assistance."¹ And as the last word is always spoken by clinical experience, the question can only be answered practically and empirically and I must therefore upon the basis of numerous and constantly growing observations repeat that I cannot, generally speaking, impute from a hygienic point of view any serious harmfulness to interrupted intercourse. I have seen cases in which sexual-neurasthenic symptoms have become more and more aggravated through a lengthened perseverance with the practice. But in opposition to these I have seen far more numerous others in which incomplete connection has been indulged in for many years without leaving behind any recognisable ill-effects, of either a subjective or objective nature. I also have reason to suspect that interrupted intercourse is capable of causing considerable aggravation almost exclusively in such cases where there is already an irritable weakness of the nervous system. It is the excess which is injurious and not the "unnaturalness" of the single act; and the habitual practice has therefore the effect of causing the glimmering nervous disease to flare up the more quickly.

Similar views are held by *Beard*, *v. Gyurkovechky*, *v. Krafft-Ebing*, *Oppenheim*, *v. Hösslin*, *Rohleder* and *Löwenfeld*, except that they differ somewhat with regard to the frequency and intensity of the undesirable consequences. *Thompson* denies all injury to the nervous system of the man through interrupted intercourse. I wish to call special attention to a valuable contribution of *Löwenfeld* in which this author gives a table of 50 cases (men and women) seen by him in which he very rarely found the cause of disease to lie exclusively in interrupted coitus.

¹This does not of course apply to the custom, frequently observed in Italy, and mentioned by *Barucco* in his "Sexual Neurasthenia" (3d edition, German translation by *Wichmann*, Berlin, 1899) of prolonging the sexual enjoyment by repeated interruptions of the act even with repeated erections. It cannot be denied that this is a pernicious vice which should on no consideration be tolerated by the medical practitioner. On the other hand, there are frigid-natured individuals who require considerable time for the exercise of the sexual act, without in any way injuring their organism. A gentleman once told me that he frequently indulges in smoking and reading while thus engaged.

Von Kraftt-Ebing has established out of 114 cases only one of marked nervous debility, and even in that one there was a neurasthenic predisposition.

On the other hand there are opponents to this opinion whose positive experiences we are bound to respect. Whereas *Freud*¹ ascribes to interrupted connection the production of a state of anxiety especially in neurasthenic and hysterical individuals (neurotic anxiety), *Bergeret* and *Peyer* infer from their observations an excessively frequent causation of sexual neurasthenic conditions, especially involuntary spermatorrhœa and even posterior urethritis. *Eulenburg* who has seen conjugal onanism produce serious forms of sexual nervous debility is not quite opposed to the idea that it may also give rise to local organic diseases of the genital organs especially in the wife, agreeing in this respect with *Kisch* and *Valenta*. Finally *Hirt*, *Barucco*, *v. Tschich*, *Gattel*, and others impute to the habit considerable importance as a disease-producing element.

In order to find some sort of compromise between the diverging opinions I should feel inclined to believe that the last named authors have accidentally come across a larger number of unfavourable cases. Anyhow I am not in favour of a general matter-of-course prohibition on the part of the medical practitioner. Each case should be decided on its merits. It is also worth remembering that where, as it frequently happens, the wife experiences no orgasm even with the intercourse fully accomplished she is no worse off when the act is interrupted. Considering how enormously frequently abortive forms of precocious ejaculation occur among the men of our present day I attach no importance to it. *Loewenfeld* is quite right when he says that most wives are contented with a very moderate amount of sexual enjoyment in their married state. That the habit of interrupted intercourse could lead a wife to unfaithfulness is not impossible but it is not likely to happen often.

The reliability of interrupted connection as a means of preventing conception though by no means insignificant is on the

¹Die Sexualität in der Aetiologie der Neurosen (Wiener klin. Rundschau, 1898.)

other hand certainly not absolute. I have heard quite a number of confessions that owing to a miss on the part of the husband the pre-arranged plan to confine the number of children to one or two has been frustrated. Not everybody is capable of sufficient self-control especially when under the influence of the powerful sensual emotion.

To sum up I look upon interrupted intercourse as the simplest preventive measure but it is neither harmless nor reliable enough to justify its being recommended as the best in all cases.

Vaginal irrigations and antiseptic introductions.—As decidedly less reliable we must regard vaginal irrigations with antiseptic solutions and the introduction into the vagina of suppositories or small sponges,¹ etc. impregnated with disinfecting substances. The complaints which have reached me to the effect that neither most carefully executed and almost fatiguing syringing nor the latest Parisian Safety-Spongelets have succeeded in warding off most undesirable events are too numerous for me not to offer the strongest opposition to contrary assertions. *Rohleder* hits the mark when he speaks of *Unsafty Spongelets* (*Unsicherheits-Schwämmchen*).

As to the effect of vaginal powder-insufflators I cannot speak from experience but judging from the opinions of others I very much doubt whether they are capable of killing the spermatozoa absolutely. Not a few women especially nulliparæ consider all these proceedings as "horrid," others owe to them more or less serious complaints.

Occlusive pessaries.—I have almost exactly the same opinion with respect to occlusive pessaries though they as well as remedies of the last-mentioned group are free from the occasional inconveniences of interrupted intercourse. In any case I think they show very little consideration to the wife's comfort. I cannot possibly enter here into a detailed description of the various

¹Perhaps better results may be expected from the remedy recently recommended by Feibes under the name of "Protector" as a prophylactic against infectious venereal diseases, with which we are not concerned here. It reminds one of a lubricant (Catheterpurin) and it possesses on account of its high percentage of salicylate of mercury really excellent antiseptic properties without being markedly irritant.

apparatuses. I have repeatedly seen modifications of the well-known and ingeniously constructed occlusive pessary of Mensinga-Hasse (rubber hemisphere with steel ring) but they all suffer from the defect as pointed out by *Kisch* and others that their introduction requires as a rule a skilled hand¹ and that they easily get out of position. For this reason I agree with *Rohleder* in not considering this reliability as favourable as is assumed by some even experienced gynæcologists. My own statistics confirm this though they are of course based on failures complained of. Some of my patients have as a result of the constant manipulations acquired painful and persistent inflammations of the adnexa. If *Ribbing* who also considers these apparatuses unreliable and injurious thinks that most educated European women feel grieved at being regarded as objects of voluptuousness he certainly goes too far, seeing that in the vast majority of cases the precaution is made use of after a full mutual pre-arrangement. I do not take here into consideration the sick wife and her privileges. Most serious consequences may have to be apprehended in her case.

Condom.—The condom is on the contrary relatively the most perfect anti-conceptional remedy and is inferior in simplicity to the interrupted form of intercourse only, a not very serious disadvantage. But it is obviously on account of its comparative trustworthiness—it is only those condoms which are made of poor material that frequently leave one in the lurch—of its most perfect harmlessness to both partners and because of its considerate nature with regard to the wife as well as of its relatively cleanly manipulation generally that it has achieved its present enormous popularity.² As to its composition and

¹I have just had brought under my notice a new preservative constructed by Weissl, the introduction of which may be "learned" by the wife under the guidance of the doctor, although it appears to me somewhat complicated (speculum, rubber plate with spring and impregnated cotton wool tampon).

²So as to give a drastic idea of the extent of the practice I may reveal that ladies belonging to the highest classes frequently bring to their husbands enormous quantities when returning from the various watering places, especially in foreign countries; even clergymen ask their medical advisers for the necessary sources of supply, and—*horribile dictu*—not infrequently have I seen the things scattered about when taking a walk in solitary places. I do not believe that most of these preservatives are used for the prevention of

technique or as to its examination I cannot enter here into details; those who require information on the subject are referred to the circumstantial account of *Rohleder* (l. c.) in connection with the observations of *Ferdy* and containing also some remarkable additions of his own. I must however protest against the condemnation of rubber condoms in favour of so-called cæcal condoms and must state definitely that I have hardly ever heard of any disturbing or injurious effects in connection with the use of the former, particularly as regards the perfectly finished, thin and yet entirely resistible preparations. I admit that not a few husbands or wives find the degree of excitement is considerably diminished and the duration of the act prolonged¹ but the majority declare that it is not markedly different "from before." This discounts somewhat the assertion of *Beard* that interrupted and condomated intercourse are equal in their effect and that they are both much more injurious than frequently exercised "normal" intercourse. *Loewenfeld* also does not hesitate to give to the condom the preference over the other anti-conceptual procedures. Even *Barucco* who is against occlusive pessaries and other preventive measures considers the condom as the least injurious appliance.

On the whole, having some years ago expressed the opinion that those who suffer through performing interrupted intercourse should use condoms I have now to modify my view in so far as to declare the latter method absolutely preferable to the former.

On the other hand I have never hesitated in condemning unrestrictedly the so-called "exciting condoms." There are probably few medical men who would not turn away in disgust from

infectious venereal diseases. In any case the condom is at the present time a very considerable factor in the preventive intercourse of married people and one with which the practitioner has to reckon. If he refuses to give his advice in these hygienically important matters, who else shall give it?

¹This is probably the reason why some husbands apply the apparatus shortly before ejaculation without apparently suffering in any material degree from this combination with interrupted intercourse. I wish, however, to warn against the use of "glans condoms," which are reputed hardly to interfere with the sensation. All those which have been brought under my notice have proved unreliable in consequence of their instability.

—or dare to recommend—these apparatuses which are not meant to serve any other purpose than to increase the sexual pleasure and are for this reason retailed secretly and in an underhand way.¹ It does not alter the case in the least that similar exciting arrangements (ampallangs) are used for the same purpose by various wild and more civilised tribes in the shape of prickly apparatuses and even of bristles attached to the perforated penis. (*Ploss and Bartels.*)

General hygienic measures.—With these observations I might very well conclude my remarks if I did not think it advisable to mention at least casually a few more general precautionary measures which are of decisive importance in the sexual hygiene of the married state, particularly where gradual transitions to real pathologic changes in the sexual functions of the active man become noticeable. With these changes themselves I am not dealing at present but I refer especially to inclinations towards the so-called occupational and psychical (moral) or hypochondriac and relative potency. It is therefore far from my purpose to enter into a discussion of the necessary therapeutics and of the various electrical, hydropathic and other “anti-neurasthenic” establishments.² On the other hand I believe I am right in laying stress—apart from the necessity of daily cleanliness as a procedure calculated to be beneficial in the sexual hygiene of the married state—upon two powerfully efficient factors namely travelling and muscular exercise.³

¹I think I ought to mention here the attitude of *Adler* on the titillatio clitoridis by the husband in cases of dyspareunia. He considers this remedy, which *van Swieten* is said to have recommended to the Empress *Maria Theresia* with success, as permissible advice. I am not inclined to absolutely contradict this author, who takes a serious view of the practitioner's duty, especially as he restricts the treatment to suitable cases and demands tact and corresponding intimacy between husband and wife, but I am rather afraid that it is in substance nothing but an onanistic manipulation on the part of the husband on his wife.

²The physical treatment of such cases of potency as well as the dietetic is elaborately dealt with in the recent work of *Goldscheider* and *Jacob* and in that of *v. Leyden* and *Klemperer* just issued, respectively.

³The separation of young husbands from doubtful company, the discontinuation of the reading of pernicious literature, the abandonment of lascivious recollections, and so forth, I take, of course, for granted, especially where excessive intercourse and its dangers are threatening.

Holidays.—These are especially as conducted now-a-days in combination if at all beneficial as hygienic measures particularly so, if suitably indulged in, in just those cases becoming more and more frequent where potential disturbances not immaterial to either husband or wife are being prepared by mental diversions especially such as are constantly created by the unhygienic life in large towns. Where the mental activity and the moral exertion necessitated by ambition, want or passion either in business, scientific pursuits, artistic work or other vocations are over-employed there is not much left for the sexual intercourse of marriage. It is in such cases as stated also by *Eulenburg* and *v. Gyurkovechky* more or less emphatically that travelling shows most excellent results; not fatiguing travelling but comfortable and enjoyable journeys to pretty places without books or other material of study. The "*procul negotiis*" is indeed an essential condition if the hitherto "neglected" wife is to be made happy on these excursions, if the diligent scholar, the sedentary and meditating lawyer, the over-worked medical man or busy merchant is to regain the affection of his life-partner whom he is taking to foreign climes, to the delights of nature or to the joyous bustle of the world without. The new impressions, the relaxation, the pleasure of fresh society and last but not least the table d'hôte in conjunction with a moderate allowance of alcohol will do the rest. Though under ordinary circumstances the medical practitioner should not be at all lax in this last respect and though he should warn against over-indulgence which is particularly harmful in sexual hygiene he will not do wrong in such cases to allow a little latitude of golden indiscretion.¹

Muscular exercise.—Of the various forms of muscular exercise, walking, mountain climbing and gymnastics are for obvious reasons the most frequently used. I cannot however resist the temptation to say a few words of praise in favour of cycling, a fine sport not as yet sufficiently cultivated, provided of course it is carried out within hygienic limits. It is just because it

¹It is hardly necessary to draw attention to the high degree of harmful sexual desire engendered by alcoholic excess, especially when in the form of drinking bouts. (*Eulenburg*.)

enables the cyclist to cover long distances by easy muscular exercise and thus get into the fresh air that it is so vastly superior to indoor gymnastics and automobilism. In addition to this advantage which fosters courage and self-reliance it possesses the unique merit—and this brings it into touch with my present subject—that as first pointed out by *Bertz* in his "Philosophy of Cycling" it produces a sub-division of activity in the cerebral centres of the cycling brain-worker. Finally, cycling is easily and quickly learnt even by elderly people, as I can testify from personal experience.¹ Its disadvantages especially with regard to sexual hygiene have been unduly exaggerated.

Psychical treatment.—As regards finally the attitude of the physician in the presence of light manifestations of purely psychical disturbances of potency and their allied forms to which young and newly married people are as is well known so much subject, it is well to remember that a few rational, firm and sympathetic words of encouragement accompanied by a little pertinent information are very often sufficient to re-establish confidence in one's own capability and self-reliance, and to avert unhappy marriages, childlessness or divorce proceedings. On the other hand we must bear in mind the experience already mentioned that on account of the peculiar whims of sexual life not infrequently prohibition of conjugal connection is followed by most satisfactory results, inasmuch as the young husband who possesses the necessary self-confidence violates the prohibition. His imagination however must be kept free from sexual affairs.

But no matter whether there are such frequently seen troubles or whether normal circumstances prevail, the husband shall as *Ribbing* puts it request as a favour and not demand as a right sexual connection with his wife; provided always that the latter is sufficiently considerate to her life-partner in taking into account his moral and hygienic privileges and in her contributing her share to render their joint married life a happy and harmonious union.

¹For details see my article "Appreciation of cycling from the medical point of view," *Deutsche Aerzte-Zeitung*, 1900, No. 17.

VII

Menstruation, Pregnancy, Child-bed, and Lactation in Relation to Marriage

VII

MENSTRUATION, PREGNANCY, CHILD- BED, AND LACTATION IN RELATION TO MARRIAGE

By Professor R. Kossmann (Berlin)

The most important work on the diseases of women which has been preserved to us from ancient times, that of *Soranus of Ephesus* says: ἡμεῖς μέντοι κατὰ φύσιν ἴδια πάθη λέγομεν γυναικῶν οἷον τὸ συλλαμβάνειν καὶ ἀποτίκτειν καὶ γαλακτοουργεῖν, εἰ ταῦτα βούλεται τις τὰ ἔργα πάθη προσαγορεύειν. "We call such special diseases of women "natural" as f. i. conception (pregnancy) childbirth and the secretion of milk provided such functions can be at all called diseases."

It is therefore seen that there were already thousands of years ago men who knew that the distinction between what we generally call "normal" (or physiological) and "pathological" is not identical with the distinction between health and disease. There are "natural" conditions in the normal course of a woman's life which may well be called diseases because they are unavoidably associated with pain and functional disturbances or at least with diminished resistibility. To these belong as *Soranus* correctly says pregnancy, childbirth and lactation but we may also add to the list child-bed and menstruation, the latter of which is κατ' ἐξουχίην called by the female sex "being unwell." That these "physiological diseases" their influence upon the married state and the influence of the latter upon them deserve a special chapter in this work the reader will readily grant.

Menstruation.—Beginning with menstruation we find that even where the phenomena associated with it do not exceed the normal limits there are still a number of symptoms which

may be regarded as a disordered state of health or at least as disturbances of the subjective condition. Before the commencement of the sanguineous discharge the woman experiences pain (although moderate in degree) in the loins and in the back, a sensation of heaviness and downward pressure in the abdomen, tension in the external genitals and often also in the breasts. All this is produced by a congestion of blood which is easily visible and which causes a tumefaction of the labia, vagina, uterus and breasts and is most probably also the reason of the increased blood pressure in the ovaries which causes the Graafian follicle to burst. Accompanying these symptoms there is an increased irritability of the vasomotor and often also of the sensory nerves, an excitation of the sexual faculty and a depression of the mental condition. Even if we admit that this change in the subjective state has reached its modern average extent by the pampering of our race it is yet evident from what we observe in mammalian animals that the main troubles connected with menstruation are unavoidable and normal. It would seem that the congestion in the generative organs is necessary for the purpose of liberating the ovum from its follicle and of fixing it in the uterine mucous membrane: the increase in the sexual desire towards the end of menstruation assures in animals the exercise of copulation at a time most favourable for the impregnation of the ovum and is in man probably an inheritance from his animal ancestors: the mental depression, finally, and the nervous irritability are possibly caused by the unnatural sexual abstinence which has become a human institution through the dictates of religion or morality. We are therefore justified in looking upon these disturbances in so far as they do not exceed materially the average condition as *vera sive naturæ*, as physiological ailments, so that though they are morbid phenomena in the sense of this book they yet require to be considered as a particular group distinct from genuine pathologic disorders.

Concerning the importance of menstruation in the married state we have just mentioned that sexual intercourse is by established custom suspended during menstruation from the principal action. As the sexual desire in the woman is increased towards the end of menstruation this sexual abstinence is

undoubtedly a proceeding antagonistic to the natural instinct. Though it is in accordance with universal custom and though it is even declared by the Parsee, Mosaic, Mohammedan and possibly also other religions as a divine commandment this is probably a result of the view prevalent among the ancient civilised nations that the menstrual blood and consequently the menstruating woman is unclean. The old Parsees used to confine their menstruating women in closed rooms so that they should not come in contact with other people; the Jews were not only prohibited from having intercourse during menstruation this being a criminal offence punished with the death of both parties, but the couch of a menstruating woman and everything that came in contact with it were also considered unclean. (3. Mos. 15. V. 20-23.) The Chinese and Japanese have similar customs and the same may be said of almost all half-civilised races. Numerous notices exist on the subject as f. i. in the work of *Ploss* and *Bartels*. (*Das Weib in der Natur- und Voelkerkunde*. 7th edit. Leipsic, 1902. I., pp. 420 sq.)

Even scientific Medicine adapted itself to this view and came to look upon the uterus as an organ of excretion whose function consisted in eliminating the injurious products of metabolism; hence the classic designations of what we call to-day "menstruation" as "*τέ καθαρισμός*" and "purgatio," (menstrua), which have retained their equivalent in modern languages under the name "monthly cleaning." Most extraordinary notions of the dreadful poisonousness of the menstrual blood penetrated from the popular superstition of oriental nations into the writings of *Plinius* and *Columella* and from these into the medical literature of the middle-ages. Seed coming in contact with menstrual blood was supposed to turn barren; fruit would drop from the trees against the foot of which a menstruating woman had been leaning; knives would get blunt by being breathed upon by them; mirrors tarnished if looked into by them. The rabies of dogs was attributed to the partaking of menstrual blood. The fermentation of new wine was sure to be interfered with if a menstruating woman entered the cellar. (This superstition is still prevalent in the Rhine district and also in other parts.) Finally intercourse with a

menstruating woman was supposed to be productive of leprosy.

Such deep-rooted superstition, to which was afterwards added the disgust of sensitive men at sullyng their bodies with blood, resulted in spite of the indifferent attitude of the Catholic Church (the moral theology of *Alphonse of Liguori* permits distinctly intercourse with a menstruating woman) in establishing abstinence during the monthly periods as an universal practice.

Marriage must take this into account. Hence the fairly general custom of arranging the wedding-day on a date not very far removed from the cessation of the preceding menstruation. The neglect of this precaution may lead to most disagreeable mental depressions by compelling the newly-married people to abstain from intercourse at a time when the sexual excitement is at its highest.

It is of course questionable whether this abstention is in reality an hygienic necessity or only a very ancient mistaken prejudice. There are weighty reasons in favour of the latter alternative. That the rut of animals corresponds to human menstruation in its main points, that is, in the periodical congestion of the genital organs and the bursting of the Graafian follicle, can no longer be denied as it was formerly done.¹ But in animals which possess a rutting period intercourse takes place just during such period and in most of them during such period only, as at other times the females experience no sexual desire and do not exercise any attraction upon the males. Even if we ignore the Darwinian theory altogether we cannot quite conceive how an homologous process could take place in homologous organs of most living creatures naturally and even necessarily as a means of propagating the species, and yet that the same process should in the case of the genus homo only be unnatural and injurious. Moreover, the instinct which compels rutting animals irresistibly to copulate is almost without an exception present in women in the form of a distinctly increased sexual desire, though like all other human instincts it is successfully combated by various psychical and somatic inhibitory processes.

¹(Editor's Note: Compare this with p. 225 in the article by Prof. Fürbringer, Chapter VI.)

It would be remarkable in the highest degree if we really had before us a natural desire distinguished by its exceptional character of a normal instinct which it is injurious to gratify. Such an hypothesis wanting both in analogy and probability cannot be accepted as indisputable on the strength of religious commands, or popular beliefs, but requires most careful examination. Such an examination is in so far of considerable importance from the point of view of the married state as it is quite possible and from a comparison with other numerous animals even probable that the sexual frigidity of so many married women, which is so disturbing an element in the reciprocal relationship between them and their husbands and often a cause of conjugal unfruitfulness, is only an extra-menstrual one. In cases where there is reason to suspect such a state of affairs the practitioner will perhaps do well to encourage an attempt in this direction. The æsthetic dislike of a possible pollution with blood can be removed by a suitable lukewarm irrigation. Experiments on animals and observations in man have shown that the highest point of the sexual desire is reached towards the end of menstruation—it might therefore be advisable to prefer that part of the period. This question is moreover of importance perhaps from another standpoint as well. As has already been mentioned it is usual with many women to exhibit towards the end of menstruation a noticeable or even a very disturbing mental depression and a marked disagreeableness of temper. The inference is therefore justified as indicated above that this disturbed condition is not unconnected with the suppression—demanded by custom—of a natural desire. Therefore in marriages where these disturbances threaten to assume considerable proportions an attempt at intramenstrual intercourse would also be indicated.¹ In any case the practitioner should make it his duty, whenever the opportunity arises, to instruct the husband as to the naturalness and obviousness of the nervous irritability during menstruation. The closely intimate relations between

¹See footnote, p. 225, in the article of Prof. Fürbringer. I must adhere to these views with regard to the rut of animals and intercourse during menstruation, opposed though they are to Fürbringer's opinions. No one who regards the periodical hyperæmia and the bursting of the Graafian follicle as the main essence of menstruation can deny its identity with the rut of animals.

two individuals who must be indulgent to and understand each other, if the marriage is to be a happy one and, on the other hand the monotony of the wifely duties connected with the household, cannot help being a plentiful source of conflicts during this period of irritability, and the practitioner should inform the husband that he must endeavour to avoid these conflicts. He must treat his menstruating wife as if she were recovering from some slight illness, that is, he must attempt to diminish the extent of the house-duties, he must keep from her worry, bad news or sorrow, he must not retort on occasional outbreaks of unjustified irritability but rather avert them good-humouredly. It is almost always during menstruation that the first clouds appear on the matrimonial horizon; the husband who is aware of the importance of these "critical days" will know how to take the necessary means for their prevention.

Pregnancy.—We will now consider the second of the physiological diseases, namely pregnancy.

If pregnancy occasions in woman a certain amount of bodily suffering, this is principally due to the fact that the *fœtus* lives as a parasite at the expense of the mother, that it consequently draws from her the entire material required not only for the formation of its own body (with the exception of the impregnating germinal cell) but also for its own metabolism. There is thus caused in the first instance a more or less complete exhaustion of the reserve substances stored up in the maternal body, and secondly an increased demand of nourishment and of oxygen. The necessary consequence of the satisfaction of this demand is an increased activity on the part of the digestive and secreting organs—the stomach, the intestines and the kidneys. There is further developed in conformity with these increased requirements an automatically working correlation between certain organs which causes the heart of the pregnant woman in particular to perform a greater amount of work. Finally pregnancy creates disturbances of a purely mechanical nature. The increasing weight of the pregnant uterus interferes with the movements of the body and is a constant burden to the dorsal region. The greater voluminousness stretches the abdominal walls, causes sub-cutaneous ruptures in them, produces an

over-tension in the abdominal muscles which prevents a re-establishment of their original tonicity, while the abdominal pressure is during pregnancy diminished. The bladder is also encroached upon and its capacity decreased; there is an increased pressure upon the intestines and especially upon the rectum the function of which is rendered more difficult; the sympathetic ganglia in the abdomen are irritated through the tension and displacement of the mesentery. Finally the intra-abdominal pressure occasioned by the crowded state of the organs hinders the return of the blood into the large abdominal veins and produces a congestion in the regions supplying them.

It is certainly true that the organism is capable of adapting itself to a certain extent to these purely objective changes in the conditions. Nevertheless this is only partly the case, and it is more difficult to draw the line where the phenomena cease to be normal and begin to become morbid, than even in menstruation. The increased consumption of the reserve material is bound under all circumstances to diminish the resistibility of the body against injurious influences. As a matter of fact it is well known that pregnant women possess a lesser resistibility against diseases of all kinds. The necessarily increased consumption of food and of oxygen easily produces digestive disturbances, and physical exertion especially in climbing even if it does not greatly exceed the normal allowance is apt to give rise to a dilatation of the left ventricle. But where the quantity of food consumed or assimilated is not sufficient to compensate for the greater expenditure, the nutrition of the body suffers, emaciation and hydræmia (serous plethora) appears in spite of the attempts of the organisms at compensation, as proved by an increase in the number of white corpuscles in the blood (physiological leucocytosis of *Virchow*.) The overloading of the blood with the end-products of the metabolism of two individuals, the maternal and the foetal, is capable, where the activity of the kidneys is somewhat diminished although they act otherwise perfectly normally, of producing albuminuria on the one hand and uræmia on the other. We may here probably also look for the indirect cause of accumulations of pigment—consequent on the destruction of a large number of red blood-

corpuscles—present not only in the areolæ of the breasts and in the linea alba under normal circumstances but also very often, and sometimes with disfiguring results, under the name of "Chloasma Uterinum" on the faces of pregnant women. The increased demand on the striped muscles of the body arising from the growing weight of the pregnant uterus lowers the working ability of the woman and soon causes, where the amount of work performed cannot be reduced below the usual quantity, overfatigue and its consequences. The slow action of the bowels produced by the overtension of the abdominal muscles and the compression of the rectum increases the inclination already existing to digestive disturbances, interferes therefore with the assimilation of food and deteriorates the quality of the blood. The diminished capacity of the bladder occasions subjective discomfort but interferes also with sleep and is under our modern arrangements which do not provide sufficient opportunities for women to satisfy immediately the desire to micturate a source of considerable inconvenience. The increased pressure upon the abdominal veins causes varicosities and œdemata especially in the genitals and in the lower extremities. It is not only the sympathetic centres which become irritated through mechanical causes; several of the disturbances mentioned and particularly the indigestion, the exhaustion through insufficient food and through hydræmia, the retention of injurious substances in the blood through deficient action of the kidneys combine among themselves and also with purely psychical influences and thus give rise to considerable nervous disorders. Among those which are so frequent that they are often regarded as unavoidable and non-pathological symptoms are the irritability of the vaso-motor nervous apparatus which shows itself chiefly in the form of palpitation, congestion, giddiness and syncope; the increased sensibility of the cutaneous nerves; nausea and frequent vomiting; functional disturbances in the Organs of the Senses (amblyopia, partial deafness, perverse sensations of taste and smell, hyperæsthesias and anæsthesias). Even without any demonstrable special predisposition or without any demonstrable complications of the pregnancy there may occur also psychical derangements, principally in the form of

marked psychical irritability depression and melancholia or in the shape of perverse longings, (*κίσσα*, or "picca" of the ancients) which cause a detestation of ordinary food and a desire for most unpalatable things.

All these disturbed conditions which, though not by any means natural, are nevertheless exceedingly frequent accompaniments of pregnancy, are of enormous importance to the married state. Where a marriage has been contracted in the expectation that the wife will participate in the earning of the livelihood, pregnancy compels her at least during a part of its duration to desist from such participation wholly or partly on account of her diminished working ability. But even the fulfilment of the ordinary house-duties devolving upon the majority of wives may become so difficult that the household is bound to suffer. The lesser resistibility against disease often renders the wife totally unable to do any work and even necessitates attendance upon her on the part of other people. Moreover the psychical irritability on the one hand and the depression or possibly the melancholia on the other make her more or less incapable for other work also besides mere mechanical duties. The proper supervision of the entire household, the firm but just management of the domestic servants, the resolute bringing up of the children, the considerate and patient treatment of the husband who comes home tired from his hard daily work: all these conjugal duties which are no doubt of the highest importance may suffer considerable neglect in consequence of such psychical disturbances of pregnancy.

Against all these facts stands out prominently the circumstance that the procreation of children is from the standpoint of morality as well as from that of patriotism the main object of marriage, and that maternal happiness is under anything like normal conditions the highest and most ennobling sentiment of woman. For this reason conjugal pregnancy ought never to be renounced willingly and on account of the disadvantages and dangers mentioned above. It so happens moreover that such a renunciation is only possible by abstaining from sexual intercourse altogether or by the adoption of certain measures preventing conception. But such an abstention is apart from

the above indicated moral and patriotic motives very much to be deprecated. Woman is seldom so frigid as to desire sexual continence or even to be indifferent in the matter—even if she maintains this to be the case. She will generally regard her husband's abstention as a serious neglect, will direct her attention to other men and may even be driven by circumstances to commit adultery; towards her husband she will become careless and inconsiderate. As far as he is concerned, it is relatively seldom that he will abstain from sexual connection entirely;¹ in most cases he will look for it elsewhere, and thus be misled into neglecting his home and leading a dissipated life; this would tend to undermine his health upon which the welfare of his family depends. And as regards anti-conceptual procedures, it may be said that those which are in any way reliable are absolutely injurious to health because of the abnormal congestion in the genital organs and of the excessive irritation of the nervous system which they produce, and also because the gratification required for the removal of that congestion and for the appeasement of that irritation—that is the ejaculatory act in man, and peristaltic movements in the uterus and in the tubes—is delayed or even absent altogether.² The preventive

¹Compare this with p. 225 in *Fürbringer's* article. I am in complete agreement with *Fürbringer* and the authorities he quotes in so far as they consider sexual continence in man in no way injurious to health. But most married men, accustomed as they are to a regular performance of the sexual act, will find it impossible to break with the custom suddenly and for any length of time.

²See p. 233 in *Fürbringer's* article. As regards the *congressus interruptus*, it is not likely to be injurious to the husband if it is exercised in such a way as to permit ejaculation to take place; in this case, however, it often misses its object, as the interruption occurs too late. As to the wife, the interruption will certainly do her no harm if she is of a frigid temperament, but I consider it very harmful if in the case of a wife who is not frigid the interruption takes place before the orgasm has reached its highest point. I have very often been able to remove quickly hyperæmia, leucorrhœa and nervous depression in married women by prohibiting interrupted intercourse. Concerning the condom, the diminution in the pleasurable sensation which it causes varies in different individuals; however, this diminution is sometimes very considerable, and in such a case, especially if it affects only the husband or only the wife, the remedy is certainly also injurious, both to the bodily and the moral constitution. As regards the other preventive measures I am in full agreement with *Fürbringer*.

measure which consists in restricting the intercourse to the third week after the commencement of menstruation is probably the only one which has not these disadvantages; but the question arises whether this partial continence would not have in many marriages almost the same results as those mentioned above.

There remains therefore for the amelioration of the injurious accompaniments of pregnancy nothing but a rational hygiene of pregnancy. What this hygiene dictates is clear from what has been said. In the first instance it is evident that a marriage which depends on the constant physical employment on the part of the wife is wrong in principle. There is every justification for the proposal to introduce legislation restricting the employment of pregnant women in certain trades, and the idea of a pregnancy-insurance which shall enable pregnant married women to receive during their pregnancy amounts corresponding to their loss of wages deserves every encouragement. It were highly desirable that such amounts should include also stated sums for the purpose of providing the pregnant woman with some domestic assistance, so that she should be spared such hard work as carrying coal or water, etc. where she is in the habit of doing so under normal circumstances. There is also great necessity to protect pregnant women against infection and against the vicissitudes of the weather. Where there is a predisposition to certain diseases and especially to affections of the kidneys, lungs, heart or the nervous system a suitable prophylaxis must be instituted and where symptoms of these diseases have already made their appearance the required treatment must be undertaken with particular care or the pregnancy determined if the necessity arises. As to what "necessity" means in this connection there is no unanimity of opinion. The law-books do not contain any definite enactments declaring when the induction of abortion by medical men is exempt from punishment. The Catholic Church has only recently condemned artificial abortion under all circumstances even where it is the only means of saving the mother's life. Most German doctors however consider it permissible or even indicated as a life-saving remedy. Some go even so far as to demand it in cases where there is danger of considerable aggravation of a somatic or

psychical disease in a pregnant woman. Under such circumstances every practitioner must for the present be responsible to his own conscience for the decision to be taken in every single case.¹

Considering that the object of marriage is not the procreation of descendants of any kind but of vital descendants who shall in their turn be capable of propagating the race, the artificial determination of pregnancy has also been recommended in cases where on account of the physical or mental suffering of the pregnant woman it is reasonable to expect sickly and inferior children. It is certainly true that the prevention of an inferior progeny being brought into the world would prove of enormous benefit to the national welfare but one would rather look for the realisation of this ideal in a restriction of marriages than in artificial abortion. As long as our moral and religious views do not permit an interference on the part of the State with the personal right of everyone to choose husband or wife, artificial abortion on account of the presumably poor quality of the fœtus in utero is absolutely out of the question.

As regards the hygiene of the mind it is principally the husband who must attend to it. Good-natured passive resistance in the presence of outbreaks of ill-temper on the part of the pregnant wife; reasonable personal attention to the wants of the household and family where everything suffers in consequence of ill-management; avoidance of all psychical irritation and mental overexertion through quarrels, exciting literature, heated discussion, theatre-going, concerts, big parties (especially at the pregnant woman's house), irregular meals and late hours—all these points are of the greatest importance. In the case of melancholic depression the best remedy is for the husband to express heartily and frequently his joy at the approaching increase in the family and his gratitude to the future mother. The knowledge that the endurance of the unavoidable drawbacks of pregnancy is a necessary accompaniment of an important duty and that it is being rewarded with love and thankful-

¹Translator's note. The general practice in England in such cases is to have a consultation with another medical man before arriving at a definite decision.

ness, acts beneficially even in the case of women in whom an hereditary predisposition or complicating diseases are the cause of the psychical disturbance. It is also worth remembering that in some women melancholia arises from a feeling of shame at the ungainly physical alteration in the figure and that an aggravation will naturally be caused by any apparent neglect on the part of the husband. In such cases the latter must continue to observe most carefully the former relations and affect a certain tender and chivalrous conduct towards the pregnant wife. As to the utility or injuriousness of sexual intercourse during pregnancy opinion is not by any means undivided but experience seems to teach us that it is not necessarily harmful. It must of course be abstained from where there is a tendency to miscarriages or in the last days of pregnancy, when there is a risk of premature rupture of the membranes. When it is exercised all violence must be avoided, and it may also be necessary, especially where the rotundity of the abdomen is well-marked, to choose some other suitable position, as *f. i.* the lateral one. In view of the circumstance that many pregnant married women consider themselves slighted by their husbands' continence, and that on the other hand, such continence is frequently a cause of marital infidelity and possibly therefore also of the introduction of venereal diseases, the practitioner will do well to be very guarded in ordering sexual abstinence during pregnancy, and to restrict the injunction to such cases where it is absolutely necessary.

Child-bed.—We come now to the consideration of the puerperium which has without question, if not in regard to its origin at least in that of its course, even where the latter is normal, the character of disease in its state of convalescence. As it is a convalescence from a traumatic injury the same method of treatment applies in the case of the puerperal woman as in that of recovery from any other injury and it is therefore not necessary to discuss the same on this occasion. But we are not concerned here even with those special measures indicated in the case of every puerperal woman, whether married or not, and will only consider them in so far as they apply exclusively to the married state.

That a large number of illegitimate births take place in hospitals, schools of midwifery or nursing homes is an undoubted fact. And if according to present statistics the mortality in German maternity institutions is as high as, or even somewhat higher than, the general mortality of puerperal women, the reason is that the institutions are debited also with a not inconsiderable number of deaths of married women who are sent there on account of anticipated dangerous complications during labour or because they are already severely infected or injured. That under similar circumstances the danger connected with the process of child-birth is at the present day smaller in the case of pregnant women entering institutions early enough than it is in those whose confinements take place at their own homes, can hardly be open to any serious doubt. The possibility of thorough asepsis in the case of the former, the proper supervision of midwives and attendants, the more complete selection of instruments and apparatuses ready at hand, the better accommodation and lighting arrangements, and the constant presence of properly trained medical officers—all these advantages tend to make the conditions in suitable establishments vastly superior.

Nevertheless such establishments are only very rarely made use of by married women. In the first instance on account of the impossibility to fix with certainty the date of the expected confinement, the pregnant woman must necessarily enter the institution many days and perhaps weeks before the anticipated event, otherwise she runs the risk of being taken by surprise while yet at home. She must consequently spend there a considerable time for no purpose especially if the confinement is delayed by several weeks as it often happens. Not only the expense connected with such an arrangement, but the long separation from home and her duties while she considers herself as yet equal to fulfil them to a great extent is doubtless sufficient to act as a deterrent. Those who cannot afford to pay for a separate room at some establishment do not care to occupy a bed in a large ward containing perhaps inmates who are not suitable company for respectable women. It so happens therefore that the considerable advantages of child-birth and child-bed at suitable institutions are available for married women to

a slight extent only. The homes for parturient women founded since 1887 in various places and particularly those which, like the first home of the kind erected in Mannheim, are intended absolutely for married women only have introduced a great change. They offer to women in labour and in the puerperal state all the benefits mentioned above, they admit women in poor circumstances without any payment and they have only the one drawback which is not in reality without its advantages to the pregnant woman herself that they take her away from her household which very probably suffers through the absence of its supervising head even if she were to direct it from her sick-bed. Where a fairly reliable substitute is available the accouchement and puerperium in such an institution should be recommended to future mothers as preferable from every point of view. There are in many places charitable societies whose object is the provision of such substitutes as f. i. in Berlin the society "Hauspflege" (Sub-division of the Berlin Women's Society). Unfortunately however it is only poor women who are thus looked after; considering how difficult it is for well-to-do families also to find a reliable substitute for the house-wife it is very necessary that similar societies be formed for the purpose of recommending respectable persons to those able to pay for their services.

But even where the puerperal woman remains in her own home such a reliable substitute is very desirable seeing that—and herein lies the great difference between married and unmarried parturient women—the mother is always running the risk of re-commencing her household duties and her attendance on the older children to an extent not commensurate with the state of her health. It is particularly the nervous system which suffers, and it may even lead to mental disorders; vexation and annoyance may also result in her leaving the bed too soon if she notices that her authority does not go beyond the door of her sick-room, and that everything outside it is in wild confusion.

But also where the substitute cannot replace the housewife in her duties and privileges particular attention must be paid to the increased nervous and psychical irritability of the puerperal

woman. The husband must keep from her as far as possible all the troubles and worries that he encounters.

Finally as regards sexual intercourse, most races and especially also the religions of the semitic nations consider a woman during the lochial discharge just as unclean as when she is menstruating, and conjugal connection at that time is therefore prohibited; on the other hand the Catholic Church (*Alphonse of Liguori*) permits it. Whereas I regard the prohibition during menstruation with somewhat critical doubts, I consider intercourse during the puerperal state, which is unfortunately more frequent than one would imagine, as absolutely reprehensible. The existing hyperæmia of the genitals is thereby considerably increased, greater or smaller labour-wounds are opened afresh, new injuries are easily caused owing to the laxity of the mucous membranes, opportunities are created for infections to make their entrance, the nervous system of the wife is violently disturbed, and often a feeling of disgust and aversion at the husband's embraces is thus instilled into her mind.

Lactation.—In considering finally the suckling act or lactation, we find in it also phenomena which are to a certain extent characteristic of disease. The secretion of the breasts withdraws from the body a considerable amount of nourishment, and sometimes a part of its reserve material, so that it becomes less capable of performing its functions, and even more or less cachectic. It also becomes more susceptible to certain diseases, and less resistive against pulmonary phthisis in particular. Lactation inhibits the functions of the ovaries and makes thus a woman for the time being sterile, and if continued too long, is often capable of producing considerable atrophy of the uterine walls. Painful tension in the breasts compels frequent application of the child—about every 3 hours—or relief by other means; the mother is thus tied to her child, she cannot leave her house for long without it and is thus incapable of seeking either work or amusement outside. Frequently a permanent loss of beauty is also feared, and not without reason, for the tense virginal breast with its small nipples remains after lactation flaccid and the nipples considerably larger.

In the unmarried woman these disadvantages are, at least in Germany, amply compensated by the advantages which she gains in becoming a wet-nurse to other mothers' children. This is not the case with married women; but they also derive great advantages from lactation; there is the saving of the high wages and of the keep of a wet-nurse, and where there is no intention to engage one, the avoidance of the many more or less serious ailments to which infants are subject when brought up on animal milk-mixtures or vegetable substitutes. An important advantage of lactation also lies in the possibility to resume sexual intercourse while it lasts without there being a probability of a speedy new pregnancy supervening. The disadvantages, not only pecuniary but also sanitary, of frequently successive pregnancies can therefore be avoided with a fair degree of certainty if the mother suckles her own child. Finally it is worth mentioning that suckling causes contractions in the uterine muscles and that it assists thus greatly in effecting a return of this organ to its normal conditions.

It follows from what has been said that lactation is one of the conjugal duties which ought never to be neglected for the sake of the retention of external beauty or haply from considerations of amusement. Only where the health of the mother or child suffers, that is, where it exhausts the former or does not sufficiently nourish the latter, lactation is to be desisted from.

But on the other hand it is a dereliction of conjugal duties to prolong lactation beyond the proper term to the detriment of the suckling for no other purpose than the avoidance of subsequent pregnancies. It is generally about the 9th or 10th month in the life of the child that the latter begins to require more food than is contained in its mother's milk. From that time onwards it should therefore be given other nourishment, but its occasional application to the breast in addition is not contra-indicated, provided there are no conditions of ill-health present in the mother.

VIII

Constitutional (Metabolic) Diseases in Relation to Marriage

VIII

CONSTITUTIONAL (METABOLIC) DISEASES IN RELATION TO MARRIAGE

By Professor H. Senator (Berlin)

We call here constitutional or metabolic diseases, a group of chronic affections of the entire organism which manifest themselves by definite disturbances in the metabolism or by general disorders of nutrition in the absence of any local or primary organic disease. Where such organic disease does exist, however, it is clinically eclipsed by the nutritional and metabolic disorders in question.

This group of diseases cannot be sharply defined, or separated, particularly from the diseases of the circulating fluid which supplies all parts of the body with the material serving for their nutrition and acts as the medium of interchange between nourishment and metabolic products. There are consequently certain—primary or secondary—diseases of the blood in which the process of metabolism and the entire nutrition of the body suffer to a very great extent, so that one or the other of these conditions of ill-health may be included in the one group just as well as in the other, if we do not altogether prefer to combine both these groups into a single one.

On the other hand, it is evident, that where the whole organism is affected all individual organs must also be affected more or less. These organic troubles are in their turn capable of giving rise to such disturbances that the general state of nutrition becomes of secondary importance as compared to the clinical aspect of a particular form of disease which may present the characteristic features of organic disease rather than those of a constitutional affection. Examples of this sort we have in rickets and osteomalacia, diseases which are undoubtedly based upon a disordered nutrition and metabolism but in which the

affection of the bones and the troubles arising from it are such prominent features that there is as much justification in classing them among the diseases of the bones and organs of locomotion as among those of metabolism. Considering that in their relation to marriage it is almost exclusively the local lesions produced by the diseased conditions of the bones which come into question, and not the general disturbance in the nutrition, they will be dealt with in another chapter of this work—among the diseases of the organs of locomotion. The same thing applies to Graves's disease, sclerodermia, etc. The former doubtless presents changes in the metabolism, but it is doubtful whether they are primary and whether they constitute the whole characteristic combination of symptoms. It is the nervous element which plays the most important part in this combination especially with regard to the conditions of married life, and for this reason it seems more appropriate to include exophthalmic goitre among the nervous diseases than among the constitutional diseases. As to sclerodermia the most prominent symptom of which is constituted by the appearance of the skin, it will receive consideration among the diseases of this organ.

The diseases of the blood, in a more restricted sense, that is the conditions which are characterised mainly by alteration of the blood and by an inclination to hæmorrhages, will likewise receive consideration apart from the diseases of metabolism proper, and be more suitably treated as a special group.

We shall therefore devote attention in this chapter to the following: Diabetes mellitus with which it is usual to associate diabetes insipidus although the latter is most probably the result of a disturbance in the distribution of the watery element based on nervous influences rather than that of intrinsic changes in the metabolism. There also belong to this group: Gout (arthritis urica), obesity (adipositas universalis) and Dercum's disease (adipositas dolorosa), myxædema, acromegaly, Addison's disease, and scrofula.

I. Diabetes mellitus.—This disease doubtless deserves the first place in connection with the subject which interests us here.

Before entering into details, it is necessary to point out that

although as is well known, the diagnosis of diabetes mellitus rests upon the presence of sugar in the urine and can be confirmed by this test only, it does not by any means follow that every discharge of sugar (especially that of grape-sugar in the urine) must be regarded as a sign of diabetes. For there are various other conditions in which sugar appears in the urine—though only temporarily—so-called glycosuria or mellituria, the different forms of which it is not the object of this chapter to enumerate.

Glycosuria in pregnancy and child-bed.—We will only mention here the elimination of sugar, not dependent on diabetes, which occurs during pregnancy and child-bed. There are two forms of it, namely:

1. *Lactosuria*, a discharge of milk-sugar in the urine which makes its appearance as a rule a few days after labour and in rare cases shortly before it. It results from a congestion and absorption of the milk-sugar from the mammary glands, and is therefore noticed particularly in strong individuals with insufficient elimination of milk.

2. *The glycosuria of pregnancy*, in which the urine contains grape-sugar as in diabetes mellitus, but only in small quantities, not exceeding as a rule more than 1%. The frequency of these glycosurias is differently stated, and this may be accounted for either by the circumstance that the methods employed for quantitative tests were of unequal strength or by the fact that the pregnant women examined used different forms of nourishment. It has been proved that the tolerance of pregnant women for sugar and other carbo-hydrates, that is the limit up to which these articles of food are assimilated after their introduction into the stomach, is often an exceedingly low one, and it is therefore conceivable that the urine should exhibit different conditions varying with the diet of the persons examined and with the greater or smaller amount of carbo-hydrates generally, and sugar specially, consumed by them. It is perhaps thus that we can explain the widely diverging statements of *Brocard*¹ on the one hand, and *H. Ludwig*² on the

¹Comptes rendus de la société de Biol. 1898 I p. 1077.

²Wiener klin. Woch. 1899 No. 12.

other. The former found among 125 pregnant women in their 7-9 months of pregnancy that half (50%) of them showed sugar in the urine, and almost in every case grape-sugar: the latter detected fermentable sugar in the urine, and in most cases only a few times and in insignificant quantities, in no more than 18 out of 82 pregnant women (22%).

Neither the glycosuria nor the lactosuria of pregnant and puerperal women cause any complaints; they are both physiological processes which may at the utmost be regarded as inclining to the border of the pathological domain, but they nevertheless deserve, and the glycosuria more than the lactosuria, every attention from the medical man, who if he will not immediately conclude the presence of diabetes will at least have reason to recommend caution for the future to the pregnant woman in question. Because, since this glycosuria is probably the result of a diminished power of assimilating sugar, it might occasionally constitute the beginning of a genuine diabetes, especially if it occurs not only after the consumption of sugar (as "glycosuria e saccharo") but also after that of starchy food (as "glycosuria ex amylo" of *Naunyn*) or if there are also other factors present that predispose to diabetes, especially, for instance, an hereditary predisposition.

From what has just been said we may draw the conclusion that the medical man will do well, even where pregnancy takes a normal course, to periodically examine the urine for sugar and to advise accordingly.

Influence of marriage on diabetes mellitus.—

Coming now to diabetes proper, we have first to consider the question, as laid down in the introduction, whether this disease can be influenced by marriage, and especially whether the individual suffering from it may expect in consequence of his or her marriage an improvement or an aggravation in the disease or a shortening in the duration of his or her life. In other words: Are there conditions created or altered by marriage which have an influence one way or another upon the course of diabetes?

Experience has shown that the course of diabetes, apart from complications and general circumstances of importance

in every chronic disease such as nutrition and strength, depends in the first instance upon its form. It is well known that there are milder and severer forms of diabetes according to the tolerance for carbo-hydrates, although the latter does not supply an absolutely safe criterion. The reason for this lies chiefly in the fact that it is not possible to draw the line between the two forms with respect to the ability to assimilate carbo-hydrates, and also because transitions occur from the milder to the severer form as do also changes in the condition of the same patient. It is of importance to remember that it is very frequently possible by suitable treatment and especially by a correct diet to increase the tolerance for carbo-hydrates and thus to ameliorate the course of the disease. Such treatment and the hygienic life connected with it are however very expensive considering that they must be resumed or modified periodically and repeatedly, and they can only be indulged in successfully where there is a certain amount of affluence and independence in the struggle for existence.

Age is also a very important factor. Generally speaking, the course of diabetes in the earlier years, to about the middle of the third decade, is more rapid and more unfavourable than at a more advanced age.

Psychical influences, especially those of a depressing character such as fright, sorrow, etc. act aggravatingly on the disease and may even, where there is a predisposition to it, *f. i.* heredity, often form the occasion of its origin.

Pregnancy and labour have also occasionally given rise to diabetes or caused it to become manifest for the first time. More frequently these processes lead to an aggravation of an existing diabetes inasmuch as a milder form passes into a severer one owing to a diminution in the tolerance for carbo-hydrates, or a rapidly running pulmonary tuberculosis supervenes which ends as a rule fatally shortly after labour. In other cases, death occurs during child-bed from coma or sudden collapse.

As to how often these processes exert their fatal influence, with what degree of probability the latter may therefore be expected, it is impossible to say, as the number of recorded

observations bearing on the point is far too small to permit even an approximate estimate only.¹

The influence of lactation on the course of diabetes has received even less attention from observers. But with regard to it we may also take it for granted that it has the effect of aggravating the disease, and that where there is a complicating pulmonary tuberculosis, there may arise the greatest danger to life.

From the above remarks we may infer that marriage presents as a rule no particular risk to a man suffering from diabetes, seeing that most men are not too young when entering the married state, and that a rapid course of the disease is consequently not to be feared. But such a contingency might nevertheless happen, when the external circumstances are so unfavourable that the necessary or desirable mode of life cannot be instituted or where intense psychical emotions are produced by pecuniary troubles or other circumstances which tend to mar the happiness of married life.

Where there are such unfavourable circumstances attending a marriage about to be entered into, or where there is reasonable ground for assuming that they will subsequently arise, the medical man's duty is, if consulted on the point, to dissuade diabetic men from marrying; he will do well to offer the same advice in cases where the patients are rather young, or to insist at least that the marriage be postponed till the 30th year has been passed, and the longer the postponement the better.

Where the unfavourable circumstances are not present, there is no fear that marriage will endanger the life or health of a man suffering from a mild form of diabetes, and in so far as these questions are concerned there is no indication to oppose the marriage.

On the other hand, a patient suffering from a severe form of the disease must under no circumstances be recommended to marry, because, even if his condition is not likely to be aggravated by the marriage, he has very little prospect of reaching the natural life-limit. To obtain an approximate idea as to the

¹For opinions on the subject see *O. O. Fellner*, *Die Beziehungen innerer Krankheiten zur Schwangerschaft*, 1903, p. 229.

seriousness of a case one may, apart from other considerations, study the tolerance for carbo-hydrates. The patient who cannot, on an empty stomach, consume at least 100-150 grammes of white bread or 120-200 grammes of brown bread (60-90 grammes of carbo-hydrates) without showing sugar in the urine in the next 6 hours must be considered as suffering from a severer form.

The conditions are different and more unfavourable in the diabetes of females. In the first instance girls marry as a rule at an earlier age than men, that is at a time of life when diabetes is less benign in its course, so that the probable duration of life is to begin with shortened. For this reason, I think it justifiable in view of the dangers threatened, to advise young girls suffering from diabetes not to marry. Women of more advanced age affected with the disease in a mild form should be told what dangers they are incurring by marrying, and the medical man should even where the circumstances are otherwise favourable give his consent to the marriage only with a certain amount of reservation.

Transmissibility of diabetes in married life.—

A further question is whether husband or wife runs any special risk through the diabetes of the other partner, that is, not only in so far as a chronic disease accompanied by painful or dangerous symptoms is likely to cause suffering and inconvenience to persons living in close intimacy with the patient, but in a specific manner. In other words, can diabetes be transmitted from husband to wife or vice versa? It is some time now since it has been pointed out by various observers that diabetes occurs in married couples, especially by *R. Schmitz*¹ who found among 2,320 diabetics seen by him 26 married couples (1.1%). The same proportion, namely 10 married couples among 900 diabetics, was found by *B. Oppler* and *E. Külz*² who calculated at the same time that 1,169 cases of diabetes reported by other authors included 11 married couples, or a proportion only slightly smaller (0.9%). I have also reported 770 cases of

¹Berl. klin. Woch., 1890, No. 20.

²Berl. klin. Woch., 1896, Nos. 26 and 27.

diabetes with 9 married couples (1.19%).¹ But as my material on that occasion consisted of private patients as well as of hospital in-and-out-patients, whereas the other statistics mentioned included probably patients belonging to the better classes only (such as are in the habit of frequenting the various watering-places) I have now, so as to make comparison easier, compiled a new list of my private patients only, and the latter shows that 892 diabetics include at least 15 married couples (1.6%). This proportion though somewhat higher than the other figures given above is still so small that it does not seem sufficient to support the view that diabetes is contagious.

But *H. Leo*² has protested against this method of calculation which takes into account married and unmarried diabetics together, and he is right in demanding that for purposes of establishing the contagiousness of diabetes the proportionate frequency should be reckoned among married diabetics only and it would then of a necessity appear much higher.³

In addition, there is a number of observations, not very great but yet sufficient to attract attention, of the presence of diabetes among persons not related by blood and not married to one another, under circumstances which suggest the possibility of contagion.

Thus *Teissier* (Lyon) quoted by *Oppler* and *Külz*, reports the case of a laundress 62 years old formerly in good health, (as was also her husband and 6 children), who contracted diabetes after having washed for 6 months the linen of a severe diabetic and that of his granddaughter who was also suffering from diabetes.

More decisive still is his following observation: A gouty man whose mother had died from diabetes developed glycosuria in consequence of intense worry. After 6 months his cook aged 60, who had hitherto been in perfect health, fell ill with diabetes; she had been in the habit of washing her master's handkerchiefs. A sew-

¹Berl. klin. Woch., No. 30.

²Über Wesen und Ursache d. Zuckerkr. Berlin, 1900, p. 86.

³I am sorry to say I have not thought of this point before, and I do not know with regard to many male diabetics whether they were married.

ing-woman, 50 years old, who had been employed in the house for 10 years and who assisted the cook, also sickened one year after her master became ill and exhibited intermittent glycosuria.

Teissier mentions also briefly the case of a coachman who used to wait at table and in whom diabetes was diagnosed shortly after his master became slightly diabetic as the result of an attack of anthrax in the face. Also, the case of a restaurant-proprietor who used to take his meals with his diabetic sister-in-law and who became diabetic after 6 months.

*E. Külz*¹ noticed diabetes in 5 inmates of the same house.

*Naunyn*² saw 3 cases of diabetes in people who lived under the same roof with some diabetics who were not related to them. Among them was the case of a young woman who developed a fairly severe—and probably temporary?—glycosuria after having stayed a few weeks with a diabetic non-consanguineous aunt whose husband was also diabetic. But the diabetes of both hosts was very mild in form, and both were almost entirely, or nearly so, free from sugar.

I have also seen a few cases of diabetes in persons who were not hereditarily predisposed and related, not consanguineously, but by marriage, to diabetics with whom they came in close contact, thus, f. i. in the wife of a man whose brother as also the latter's wife were diabetics.

More remarkable however than all these observations is the following: Dr. H. 42 years old, medical practitioner in a small provincial town with about 2,500 inhabitants, hitherto in good health and not hereditarily predisposed, consulted me in March, 1899, on account of his diabetes which he had noticed shortly after having amputated a gangrenous thigh in a diabetic patient.

¹Klin. Erfahrungen über Diabetes mellitus. Edited by *Rumpf*, etc. Jena, 1899, p. 246.

²*Nothnagel's Spec. Path.* VII., p. 126.

At the same time there were in one single street of the little town 5 more diabetics, namely 4 men of whom one was the proprietor of an inn—which the other three frequently visited, and a woman, the wife of one of these 3 diabetic men.

None of these observations, however, supply an incontrovertible proof of the contagiousness of diabetes. The striking coincidence in these cases might be explained without the intervention of a contagious element by assuming that the presence of the disease, or the occurrence of grave symptoms in one person causes another who has relations with him to direct his attention to the state of his own urine and thereby to discover a diabetes which was already existing previously though perhaps in a latent form only. Or there may possibly be in the case of one or another of these apparently infected diabetics an hereditary predisposition if not to diabetes, perhaps, to some other disease etiologically connected with it, such as gout, obesity, or psychosis, and some circumstance arising from the intercourse with the diabetic, as f. i. mental shock at the occurrence of coma or gangrene, etc. constitutes an opportunity for the disease to break out. Finally, one might find the explanation, as I pointed out long since¹ with regard to the then hardly known occurrence of diabetes in married couples, in the circumstance that, if not an absolute coincidence, the same causative conditions produce the same effect in the husband and the wife,—an explanation which received fairly universal assent.

But these explanations are after all nothing but conjectures of which the one may have more and the other less in its favour than the theory of contagiousness. Some of the cases quoted, and particularly the last, are so remarkable that they give food for reflection whether some cases of diabetes are not in reality due to contagion. The attempts to examine this point experimentally have shown that it is not entirely without some justification, but so far they have not led to any definite conclusions.

We must therefore at all events reckon with the remote possibility that where either husband or wife suffers from dia-

¹*H. Senator*, Diabetes in *v. Ziemssen's Spec.-Pathol.* XIII. 2, 1876, p. 122 and 2nd edit. 1879, p. 394.

betes the other partner may sooner or later also develop the disease. But the degree of probability of this contingency is according to our present experience a very small one, somewhat greater perhaps where the individual as yet free from the disease is hereditarily predisposed to it, but for all that not sufficiently great to justify the medical man in taking special precautions which entail more than a correct hygienic and dietetic mode of life.

Influence on the generative faculty.—In other ways, too, diabetes may have, owing to certain of its peculiarities, an effect upon the course of marriage. *Firstly*, as regards the husband, there may be sexual impotence, a very frequent symptom, which appears sometimes early even in mild forms of the disease and sometimes later in its course, and which can often be removed permanently or temporarily by suitable treatment. *Secondly*, as regards the wife: Besides amenorrhœa and other disturbances of menstruation which are as far as married life is concerned of no practical importance, sterility is frequently seen in diabetic women as a consequence of various causes, f. i. atrophy of the uterus or of the ovaries, prevention of conception through the abnormal constitution of the vaginal secretion, inflammation and ulceration of the vulva and vagina, etc. Where conception does take place, which is frequently the case, the pregnancy is in a considerable number of cases interrupted prematurely, either spontaneously or by medical interference.

And now, in order to save the diabetic wife from the dangers of pregnancy and labour, the question arises as to whether conception shall be prevented. But this is a measure which is connected with so many different circumstances, including some which do not even belong to the domain of the physician, that the latter will be well advised on occasions of this kind to leave the decision to the respective married couples themselves.

Opinion is, however, divided as to whether it is advisable, where pregnancy has occurred, to interrupt the same by the induction of abortion or premature labour, and it is hardly possible here, like in many other diseased conditions to lay down any general rules for the guidance of all pregnant women.

For, as already stated, on the one hand the fœtus often dies and is expelled, making interference unnecessary, and on the other the life of the mother is more and more in jeopardy as the pregnancy advances and labour approaches. The physician will therefore have to take into consideration in each individual case, above everything else, the severity of the disease and the state of nutrition and strength of the mother.

The premature interruption of the pregnancy by the induction of abortion is generally considered to present the best chances for the mother. It is however necessary to ascertain first what value is attached by the married couple or by those who represent them to the advent of the child, as circumstances might necessitate the preservation of its life, though perhaps at the cost of that of the mother. It is therefore advisable in order to guard against future reproaches to leave the decision entirely in the hands of the relatives after having explained to them the probabilities of the case. A safe rule in such cases is to call in a second medical man to share the responsibility.

Influence on the offspring.—Diabetes presents finally a double danger to the offspring. First, because the children of diabetic mothers, though they are often born alive, come into the world in a weak and pitiful condition, and secondly on account of the hereditary character of the disease. For of all etiological factors heredity is the one which is most frequently and most surely demonstrable. Older authors knew already of the occurrence of diabetes in several members of the same family or in several generations, and recently, since the subject has received attention not only with regard to the presence of the disease in parents or in brothers and sisters, but also in more distant blood-relations, the number of cases observed has grown more and more. More than 40 years ago, when diabetes was still regarded as a fairly rare disease *Griesinger* was able to prove heredity in 3 cases only out of 225 observations collected by him (1.3%); but *Frerichs* established hereditary predisposition in 10% of his cases, *Gruber* in 8%, *Teschenmacher* in fully 8%, *Seegen* in 14% and *Bouchard* in as many as 25%. More recent calculations depending on material somewhat similar to each other, that is, with exclusion of hospital in-and-out-

patients, do not reveal such diverging percentages. The figures of *von Noorden* show hereditary predisposition in 18.5%, those of *Külz* 21.6% (150 times out of 692 cases), those of *Naunyn* 17.4% (35 times out of 201 cases), and my own records show decided hereditary or familiar predisposition in 18.6% (166 times out of 892 diabetics). A far higher percentage was found only by *R. Schmitz*¹ in Neuenahr, who established hereditary predisposition in 998 out of 2115 diabetics (47%).

Even if we leave the last figure out of account, the proportion is still high enough to deserve serious consideration. A fifth of all diabetics who are seen in private practice and are presumably part of the better-class population is, at least as regards Germany, most certainly hereditarily predisposed to diabetes. But the proportion among the poorer patients who are seen in hospital practice also seems to be about the same. For various and obvious reasons, the family histories given by this class of patients with reference to diseases in their parents, brothers, sisters or more distant relations are not very reliable; I have nevertheless been able to ascertain hereditary or familiar predisposition in 14-17% out of 79 cases seen at the Berlin University Polyclinic which disclosed any etiological information.²

That diabetes, resting on hereditary predisposition frequently passes over one generation and appears in the third, is well known. But what has struck me is that in such cases the disease often makes its appearance at an early age, and even in very young children. Among 25 diabetic children between 3 and 18 years old, whom I saw in consulting practice, and 13 of whom were boys and 12 girls, there were 7 whose parents were free from the disease, while one of their grandparents had suffered from diabetes. As usual in such young persons, the disease took in all of them a very rapid course, and in one case death occurred within 11 or 12 days.

With regard to the question of marriage and attitude during married life, there are no doubt diabetics who are not altogether

¹Berl. klin. Woch. 1891, No. 27.

²Compare *G. Jablotschkoff*, Statist. Beiträge zur Aetiologie d. Diab. mell. und insipid. Dissert., Berlin, 1901.

indifferent about the possibility of the disease being transmitted to their descendants, but generally speaking not much importance is attached to the point, seeing that the contingency is one to be relegated to the more or less distant future. The physician should however, without pretending to prophesy, express an opinion in that direction if consulted at all in the matter, and endeavour if it lies in his power to avert possible mischief. The precautions which might eventually become necessary in view of the hereditary transmission of diabetes are practically the same as those indicated when the question of marriage arises or as those to be adopted during the married state.

If a viable child is born to a diabetic father or a diabetic mother, it is the duty of the medical attendant to watch it most carefully, and to examine the urine as often as possible, so that in case any symptoms of diabetes should make their appearance, he could at once institute the necessary treatment and endeavour to counteract the disease, if possible. Unfortunately, he will achieve this the more rarely, the younger the child.

On the strength of what has been said above, the attitude of the medical man on the question of the marriage and married life of diabetic individuals may be summarised as follows:

A person suffering from diabetes should be advised not to marry before the age of 30-35.

In a man who has reached or exceeded this age the conditions which render marriage undesirable are: a grave form of the diabetes, permanent impotency and unfavourable external circumstances such as are likely not to be improved or to become even worse by marriage. Where these conditions do not exist, the man must not exactly be advised to marry, but neither must he be dissuaded from doing so. It is, however, necessary to inform him of the dangers which may accrue to his eventual offspring.

Diabetic females who have either reached or passed the above-mentioned age should, where the disease is of a severe type, or where the outward circumstances are unfavourable, be distinctly dissuaded from marrying. Otherwise, and where the person concerned is still of a conceivable age, the doctor must not recommend marriage, but after having pointed out the

dangers arising to herself from an eventual pregnancy, and those threatening her eventual offspring, he should leave the decision to her.

The decision as to whether married couples should, on account of the dangers mentioned above, prevent conception must be left to them entirely.

Where pregnancy supervenes the question whether the same should be arrested deserves to be taken into consideration, and measures will be taken in accordance with the views expressed above preferably in conjunction with a second medical man. It is advisable to examine periodically for sugar the urine of every pregnant woman especially where there is an hereditary predisposition to diabetes.

Diabetic women should on no account be allowed to suckle their children.

Finally, it is self-evident that the diabetes of husband or wife must in every case be medically treated, and that those symptoms especially, which act injuriously upon the married state, must also receive most careful attention.

II. Diabetes insipidus (polyuria).—This disease is not frequent, it seldom endangers life, and it is generally accompanied more by inconvenient disturbances than by grave symptoms. For this reason it does not present any special points in reference to the question of marriage and of the married state, and no other significance than that of a minor ailment of indefinite duration. The only element which might come into consideration from our present point of view is that of heredity; but such an heredity has not on the whole been often observed; far more rarely than in diabetes mellitus, and in contrast to the latter, the hereditary form of polyuria does not present any special dangers with regard to the duration of life. There are on the contrary examples that members of families affected with the disease have exhibited as a rule remarkable longevity.¹ From this standpoint neither, does polyuria therefore present any special misgivings.

III. Arthritis urica (gout).—It is necessary to

¹A. Weil, Virchow's Arch., 1884. Vol. 95.

remark at the outset, that we are considering here only the so-called real gout, (arthritis urica or vera) and not the allied painful affections of joints or neighbouring tendons and bones, which are often designated by the public as "gout."

Heredity.—The importance of this genuine gout from the point of view of marriage lies almost exclusively in its etiological conditions, and especially in the circumstance that it rests upon heredity more than perhaps any other disease. This fact, which was already known to former generations of medical men, has been confirmed again and again, although the figures at our disposal relating to the frequency with which gout is demonstrable among blood relations do not agree with each other, a circumstance which is hardly surprising seeing how difficult it is to obtain reliable family histories. The proportion varies perhaps in different countries under the influence of climate, race, etc. It is certain that even if we reckon the direct transmission of the disease from parents or grand-parents only, heredity is demonstrable in almost 60% of the cases, and the percentage is naturally greater if we take into consideration collateral lines as well. This applies at least to England, the classical home of gout.¹ In Germany the proportion does not seem to be any smaller, if it is not larger, as *Braun*² says that among 65 gouty patients he did not find a single one who was not hereditarily predisposed. In France the proportion appears to be somewhat less; it is according to *Lecorché*³ 57%, and according to *Pâtissier*⁴ and *Bouchard*⁵ only about 43-44%. Like other hereditary diseases, gout also shows occasionally omissions in intervening generations.

There is, besides, a correlation resting on an hereditary basis between gout and diabetes, of such a kind that the former predisposes as a rule to the latter; very seldom it is the other way. Hence why we oftener see diabetes appearing in gouty families

¹*Ch. S. Scudamore*, A treatise on the nature and cure of gout, etc.—*A. B. Garrod*, The nature of treatment of gout.

²*Beitrag zu einer Monographie der Gicht*, Wiesbaden, 1860.

³*Traité de la goutte*. Paris. 1884.

⁴*Bull. de l'acad. de Méd.*, 1840.

⁵*Maladies par ralentissement de la nutrition*.

or gouty individuals contracting diabetes in addition, than gout added to diabetes. It is worth mentioning that diabetes supervening on gout generally runs a favourable course.

Other etiological conditions.—The hereditary transmission of gout occurs more frequently from the father's side than from the mother's, and this is probably easily explained by the enormously greater frequency of the disease in the male sex. The exact proportion of this greater frequency is difficult to ascertain, because the statements on the subject vary so much, and this in its turn is due to the circumstance that different observers take different views of what arthritis or "gout" is. In women especially, it is a common thing to include among cases of real gout other forms of chronic articular inflammation, such as 'arthritis deformans. Gout is, according to general experience, principally a disease of advanced age; only exceptionally the disease has been observed in individuals under 25 years of age, or in children, but it appears that such cases may occur, especially in families severely predisposed to gout through a series of several generations.

The occurrence of gout is facilitated by an intemperate and over-indulgent mode of life accompanied by an excess of food and meat in particular, abuse of alcoholic liquors especially certain heavy kinds of wine and beer, insufficient physical exercise and sexual transgressions. It is not possible to state accurately in figures the extent of the influence exercised by each of these factors, and for this reason we attach greater importance sometimes to the one and sometimes to the other. Sexual intemperance may, perhaps, account for the circumstance that gout and syphilis go very often together.

The same factors may, though less frequently, give rise to gout in people who are not hereditarily predisposed to it, and we may add to them in all probability as a predisposing element, chronic lead-poisoning.

The disturbances caused by gout, show with regard to marriage no peculiar characteristics. Acute attacks run as a rule a similar course to that of other acute diseases; after their cessation the individual affected is practically in the same condition as he was before. It is only when the attacks become

very frequent and more and more joints get affected, that is, when the disease assumes a chronic form, that the matter assumes a different aspect.

Chronic gout leads in the course of time to organic changes, deformities in the joints which interfere with their use, disease of the kidneys, of the heart and vascular system, of the liver and other organs; but these sequelæ do not as a rule make their appearance until late in life, seeing how seldom gout affects young persons, so that they hardly ever arise at a time when people are about to marry. But should it happen that a man affected with chronic gout—and in view of what has been said as to the predisposition of the two sexes, it is almost always men that suffer from this disease—is about to enter the matrimonial state, his future wife will have to make up her mind not only that she is not marrying a healthy and vigorous man who will be able to gratify fully her desires, sexually or in other directions, but also that she will probably sooner or later be called upon to assist and nurse her husband who moreover will hardly reach the allotted span of normal life. The same scruples would have to guide the physician in the case of a young man affected with severe gout, a not impossible occurrence where there is a strong hereditary predisposition and injudicious mode of life.

Apart from such cases there is no necessity to oppose marriage where there are no complications accompanying gout; sometimes it might even be advisable to recommend it especially where there is reason to anticipate in consequence of the married state a salutary change in the manner of life of the individual concerned, such as would produce the disappearance of the above-mentioned injurious etiological elements of the disease. From this standpoint it might appear rational to advise young *bon-vivants* especially if coming from a gouty stock to get married.

Regarding the married state it is the duty of the practitioner where either one or both of the married partners suffer from gout, in addition to the necessary treatment to protect if possible the children from the disease or to counteract the same by recommending an early regulation of the whole mode of life in

accordance with the well-known principles relating to the subject.

IV. Obesity (*adipositas, lipomatosis universalis*) and *adipositas dolorosa*.—Obesity from the standpoint of marriage is important first on account of its etiological circumstances, and secondly because it occasions a certain amount of disturbance in the sexual functions. On both points it is the wife who is more interested than the husband.

Etiological conditions.—As regards the etiological conditions, obesity rests very often on family predisposition, and is consequently inherited, whilst in a number of cases it appears as an acquired disease. The frequency of inherited obesity is differently estimated, and namely for various reasons apart from the general fallacies which underlie all calculations that depend on family histories. For racial peculiarities and climatic conditions play here an undeniable part probably because certain elements favouring obesity have been inherited through many generations. It is well known f. i. that the women of many eastern nations are very frequently obese, a condition which is not only not undesired but rather looked upon with great favour.

In Central Europe the family predisposition can generally be demonstrated in more than half the number of cases. Thus *Kisch* found in 4,000 cases of *lipomatosis universalis* 2,235 with such predisposition (about 56%); *Chambers* 22 out of 38 (nearly 60%); *von Noorden* more than 70%, and *Bouchard* on the other hand 31 only out of 86 cases (36%).¹

The predominance of the female sex becomes apparent where there is hereditary predisposition, already during childhood, but still more at a later age, past the prime of life, that is, at and after the climacteric period; in men also obesity is more frequent at more advanced ages than in their earlier years.

In addition to the greater prevalence of obesity among women and older men, there are also a number of other causes

¹*E. H. Kisch*, Die Fettleibigkeit. Stuttgart 1888.—*Chambers*, Corpulence or the excess of fat. London 1850.—*v. Noorden*, Fettsucht in *Nothnagel's Spec. Pathologie* VII. 4. 1900.—*Bouchard*, Ralentissement de la nutrition. Paris 1890.

which co-operate in producing the disease, even where there is no familiar predisposition to it. As such we have to name in the first instance an excessive (i. e., disproportionate to the requirement) consumption of food and especially of such articles of diet which are supposed to form fat or reserve-material, that is, carbo-hydrates, such as farinaceous food and sweets; secondly insufficient physical exercise, by which as it is well known the consumption of fat is diminished; and thirdly a plenteous consumption of alcoholic liquors, seeing that alcohol is a reserve-article for fat. If obesity is noticed more often in wine and beer-drinkers than in those who take spirits it is because that part of the population which furnishes the majority of spirit-drinkers consists as a rule, of people who do not take a great deal of food but who have on the other hand more laborious work to perform than beer and wine drinkers, a circumstance which more than counteracts the influence of the alcohol.¹

Disturbances in the sexual function.—In addition to these three injurious agencies, the first two of which are particularly active in women of maturer age, there is a further powerful factor in the insufficiency or absence of the sexual function.

The importance possessed by the non-exercise of this function in the accumulation of bodily fat has from times immemorial been recognised both in man and animals, and it has recently been confirmed experimentally by modern investigators.² These experiments have proved conclusively that by the removal or destruction of the genital glands—ovaries or testes—a predisposition to obesity is produced.

This phenomenon explains the frequent occurrence of amenorrhœa in obese women, partly also that of sterility and

¹Translator's foot-note: The reader should bear in mind that this passage refers to European continental conditions. The working-classes in England and, I believe, in America also, are not as a rule given to spirit-drinking; it is beer which plays here the principal part. This may however explain why one sees so many more stout people on the continent of Europe than either in England or America.

²Loewy and Richter in *Du Bois-Reymond's Arch. f. Physiologie* 1889. Suppl., and *Centralblatt f. Physiol.* 1902. No. 17.

also probably why in those cases where pregnancy ensues the mammary glands act so deficiently. This deficient lactation is most likely also influenced mechanically by the atrophy of the glandular parenchyma through the weight of the excess of fat.

Another cause of the sterility in obese women is the mechanical hindrance in the exercise of the sexual act and the consequent prevention of conception through the formation of fat-deposits in the external genitals. Irritation of the skin and mucuous membrane near and in the vulva caused by perspiration and friction between the folds of fat (intertrigo, vulvitis, etc.) may have a similar result.

The impotence frequently noticed in fat men probably rests on like causes, namely in the first instance on an atrophy or other kind of degeneration in the testicles resulting in azoospermia, which *E. A. Kisch*¹ found in 9% of the highly obese men whom he examined in this respect. The sexual desire and erective faculty are in such cases as a rule also diminished, and finally there is often a distinct mechanical interference with the copulative act produced by the mass of abdominal fat surrounding the penis. With the improvement in the obesity the sterility due to this cause soon disappears.

Apart from the disturbances connected with the sexual life it is worth noticing that there are also others in direct association with obesity of which the principal are those affecting the heart and vascular system giving rise to dyspnœa and congestive symptoms, and glycosuria which may develop into a regular form of diabetes. The latter is usually, like the diabetes occurring along with gout, of a mild character.

We may sum up what has been said above with regard to marriage and the married state in the following guiding principles for medical men:

Significance with regard to marriage.—There is no risk attached to marriage as far as the obese husband is concerned, unless we deem it prudent to point out the possibility and significance of sterility resulting from one or other of the

¹*Kisch*, l. c. p. 130.

causes mentioned, and to recommend a suitable method of treatment, where such a course is requisite. The latter is of course also indicated if the obesity and its consequences arise in the course of married life.

In the female sex obesity may render pregnancy dangerous on account of the probability that the disturbances created in the circulatory and the respiratory organs may attain serious proportions. This consideration will however hardly arise in the case of young women about to become married, since obesity rarely is present in other but older females. Where such a thing does happen and an obese young girl or widow contemplates marriage, the physician must call her attention to the dangers she is incurring and at the same time point out the possibility that her marriage may prove sterile from one or other of the above-mentioned causes.

It is of course understood that the treatment of the obesity can be commenced before or after the marriage, just as can be done with respect to all disturbed conditions arising from it. If the treatment does not succeed, it may become necessary in the event of pregnancy occurring to take into consideration the advisability of arresting it by inducing premature labour in order to obviate danger to life. The principles which were laid down when discussing the matter under Diabetes will guide the medical man in coming to a decision. (See page 275.)

Addition:—*adipositas dolorosa* (*Dercum's disease*).
—This affection which has only recently been described as a separate disease, occurs in two forms: (1) as a general and diffuse obesity like the one just discussed but associated with more or less pain over more or less extensive surfaces, and (2) in the form of multiple and painful lipomata.

The significance of the first form from the standpoint of marriage is on the whole similar to that of ordinary obesity, except that the pain occurring either spontaneously or as the result of pressure may necessitate special consideration of the disturbances likely to ensue in consequence of the sexual act or of the excessively painful character of an eventual labour.

In the second form it is only these last-mentioned difficulties which will at least once make their appearance.

Generally speaking it is only very rarely that medical advice can be sought, by sufferers from this disease in connection with the contraction of marriage, especially as, judging from the scanty material existing on the subject, it is principally women at and after the climacteric age who are subject to it.¹

V. Myxoedema.—Of this not very frequent disease we also distinguish two types:

(1) The infantile form of myxoedema (called also sporadic cretinism). It begins at an early age and leads in the course of time, usually about puberty, to such grave physical deformities and mental disorders that the marriage of an individual affected with it can hardly ever come into consideration. The successful results of thyroid-gland treatment do not make any difference in this respect, seeing that they are only of temporary duration and that the discontinuance of the treatment is rapidly followed by a return of the symptoms.

(2) The myxoedema of adults, far more frequent among women than men, commences generally between the 20th and 50th year. In a few cases an hereditary or familiar predisposition to this disease has been observed. Still more frequently cases of insanity are found to have been present in the family or nearest blood-relations.

The marriage of an individual suffering from myxoedema, whether it be a man or a woman, can naturally form the subject of a medical consultation only at a time when all or almost all the symptoms of the disease have yielded to treatment, and a diagnosis would be impossible without a knowledge of the past history of the candidate for marriage. In such a case, the doctor would be the victim of an intentional or unintentional deception, since, were he to give his consent to the marriage, he would certainly not have done so if in possession of all the facts. For in this form of myxoedema, too, the results of treatment are transitory only, and we cannot as yet say with certainty how often it may be possible to repeat the treatment successfully or whether the symptoms may not return

¹S. P. Strübing, *Arch. f. Dermat. u. Syphilis* Vol. 59.—Ch. Féré, *Revue de Méd.* 1901 Nr. 8.—Roberts, *Philadelphia Med. J.* 1902 Nr. 17.—A. Weiss, *Wiener klin. Wochenschr.* 1903 Nr. 17.

in spite of the repeated treatment and prove disastrous in some way or other to the married couple.

These symptoms are in addition to the cutaneous changes which have given the disease its name, and besides the deformities due to these changes: marked decrepitude and slowness of motility, feebleness of mind, which can go as far as absolute imbecility, and, in regard to the sexual functions, an inclination to miscarriages. There are also frequently noticed: albuminuria and glycosuria, a combination of exophthalmic goitre and acromegaly, all of them signs of a profound disturbance in the metabolism. They require treatment during as well as before marriage.

It is questionable whether the hereditary predisposition to the disease observed sometimes can be removed by the removal of the disease itself. There is no risk of the transmission of myxœdema from husband to wife or vice-versa.

VI. Acromegaly.—This disease is so rare that for this reason alone, it will only be on exceptional occasions that the medical man will be called upon to deal with it in reference to marriage. Besides, like myxœdema with which it has many points in common, acromegaly gives rise to such deformities and disorders that it is extremely unlikely, at least when the disease can be diagnosed with some certainty, that anyone afflicted with it, whether it be a man or a woman, should entertain the idea of marrying or, if so, expect to be loved in return. From a medical point of view, the marriage of an acromegalic individual must be decidedly opposed, even where the disease is not yet fully developed or where there is only a suspicion that it is present. Because although the disease does occasionally get arrested, and although one or other of the symptoms shows at times an improvement, acromegaly is on the whole a more or less rapidly progressing disease, and one which has so far withstood all treatment.

Of all the symptoms of acromegaly those which have the most serious effect upon the married state are besides the general diminution in the physical and moral capability, in women amenorrhœa and sterility, and in men the extinction of the sexual desire.

There is no fear of the disease being conveyed from one of the married partners to the other.

But on the other hand a direct hereditary transmission, to the offspring of acromegaly as a whole or of an inclination to giant growth in the whole body or single extremities, has repeatedly been observed¹ though not in such numbers as to justify on this account a prevention of conception or the interruption of an eventual pregnancy.

VII. Addison's disease.—This affection which in spite of isolated reports of therapeutic successes must still be looked upon as an incurable disease, forms when fully developed an undeniable contra-indication against marriage. Where not yet fully developed and where the diagnosis cannot be made with certainty it is advisable to recommend a postponement until such time when a decision will be possible, which may be expected to be the case in the course of a few years.

The married state as such is no more influenced by Addison's disease than by any other chronic ailment conducive to decline.

Nothing is known as to the contagiousness of the disease or as to its hereditary transmissibility.

VIII. Scrofula.—Being a disease which both in its origin and in its course is peculiar to childhood up to puberty and slightly beyond it, scrofula as such, that is as an existing condition of ill-health, hardly ever comes into consideration in connection with the subject of marriage or the married state. At the marriageable age it is perhaps certain processes which stand midway between scrofula and tuberculosis, but approaching more the latter, such as lupus and the so-called scrofulous affections of the joints and bones that might demand our attention in this respect. These will be found treated in other chapters of this work in so far as they relate to the subject of marriage. (See Diseases of the Skin, and Diseases of the Organs of Locomotion.)

Apart from these diseases, there are some consequential

¹S. J. Schwoner, *Ztschr. f. klin. Med.* XXII. 1897 Festschr. S. 202.—E. Bonardi, H. Morgagni 1899 Nr. 9.—Breymann, *Deutsche Ztschr. f. Nervenheilk.* XVII. 1900.—A. Fränkel, *Verhandl. des Vereins f. innere Med.* in Berlin, 1901, April.

results of past scrofulæ which might exhibit a certain importance in connection with the subject of marriage, as f. i. scars of the skin, of the mucous membranes or of the lymphatic glands along with possible slight deformities or functional disorders, but they are more likely to constitute æsthetic rather than medical objections and will not as such often come under the notice of the physician.

Relation to tuberculosis.—Of greater importance is the fact that scrofula forms a predisposition to tuberculosis and that in the case of individuals who have had scrofula there is always a fear that they will sooner or later be attacked by tuberculosis, especially of the lungs and larynx. And no less important is the other fact that if not scrofula itself at least the predisposition to it and therefore the predisposition to tuberculosis is transmissible to the offspring and consequently hereditary.

The marriage of an individual who has had or still has scrofula may therefore give ground for hesitation firstly because he or she may develop tuberculosis after marriage, an occurrence likely to prove more or less disastrous, and secondly on account of the possibility that the offspring of such marriage will equally suffer from scrofula and the predisposition to tuberculosis associated with it.

But although these scruples are theoretically justified it is only very seldom that practical conclusions are possible, and unfortunately the medical profession is able to achieve the least good in this direction just where it is mostly needed. It is well known that the most favourable conditions for the development and dissemination of scrofula are created not only by inherited predisposition, but also, and even without such predisposition, by imperfect nourishment, by a deficiency of light, air, warmth and cleanliness, in short by that combination which we are in the habit of calling "bad surrounding circumstances."

It is under such circumstances that the poorer classes of the population live and suffer, and it is here where the medical man could often raise his voice against many a marriage and prevent by words of advice and warning the procreation of scrofulous children. But these very same classes do not as a

rule seek medical advice on such matters and in the exceptional cases where they do, they seldom adopt it for reasons which it does not lie in the power of the doctor to remove.

Among the well-to-do classes, on the other hand, scrofula need not be regarded as an obstacle against marriage, at any rate, not as a serious obstacle. Because, as already mentioned, scrofula has in the first instance run its course by the time marriageable age has been reached. And secondly, because the possible dangers arising from a previous or still existing scrofula may both in the individual affected and in his offspring be counteracted with a certain amount of success where there are the necessary means and will-power.

Where the circumstances are favourable there is consequently no necessity for the medical man to oppose the marriage of a scrofulous individual even where there are still some traces of the disease left; nor will he under similar circumstances have to take any other precautions with respect to the offspring of scrofulous or ex-scrofulous parents than to recommend an avoidance of all injurious influences in the mode of life of the latter and the best possible hygienic surroundings for the mother in the case of pregnancy. As regards the children it is desirable that every endeavour be made that they receive judicious nursing and a bringing-up intended to make them strong and resistant.

IX

Diseases of the Blood in Relation to Marriage

IX

DISEASES OF THE BLOOD IN RELATION TO MARRIAGE

By Professor H. Rosin (Berlin)

General relations between blood-diseases and marriage. Influence of blood-diseases upon marriage.—Among the diseases which may exert a far-reaching and lasting influence upon marriage those of the blood are of especial importance. The reasons for this are manifold. In the first instance, the anomalies of the blood which occur most frequently have a decidedly chronic character, and are included among the constitutional, some of them even among congenital, diseases. Though they are usually non-malignant and *per se* not virulent in their course their injurious effects are often of long duration, not infrequently hard to remove and occasionally altogether unavoidable. Another group, fortunately more rare, equally of long duration is generally fatal in its issue and is reckoned among the severest diseases which we know. There are only a few acute disorders in the constitution of the blood which occur mostly secondarily that are amenable to rapid and successful treatment. We must therefore expect disturbances in the happiness and duties of married life if it is only on account of the long duration and partly also of the severity of these diseases.

But affections of the blood are injurious in their effect upon marriage not only as diseases pure and simple, they have also unfavourable remote influences and particularly upon the sexual organs. If every organic disease reacts more or less injuriously upon the other organs in the body, this is especially the case as regards the blood, seeing that it penetrates into every part of

the organism and that it acts as the intermediary of the metabolic process to a very considerable degree. The sexual organs, especially in the female sex, are naturally also very much dependent on a supply of healthy blood. They share this requirement with the other organs. It is however well-known that there are, besides, certain special relations between the genital organs and the blood, so that in the event of disease of the latter the former may suffer in consequence; this is especially the case with married people and particularly so in married women. We know quite a number of diseases of the genital organs of married women, and many a case of severe pregnancy and labour as well as cases of insufficient lactation which are due to an abnormal condition of the blood.

We have also to take into consideration the unfavourable results which appear in the offspring as a consequence of blood-disease in the parents. Apart from the circumstance that certain affections of the blood are decidedly hereditary, there are a number of other milder but also lasting constitutional diseases of the blood in the parents, which may result in the procreation of a weak and non-resistant progeny, who require extraordinary care and attention and destroy the happiness of married life.

Of no less import is the influence of marriage on the diseases of the blood, though not in those severe affections which have an absolutely unfavourable prognosis. The congenital diseases also are not always subject to any influence on the part of marriage. But it is those by far more frequent slighter anomalies which are chronic and constitutional that often experience through marriage a complete transformation. In the man, the more orderly habits of life, the greater circumspection, the regulation of the sexual intercourse occasions an improvement in, or disappearance of, the disordered blood-formation previously in existence. The same factors co-operate in the woman and in her case it seems further that the gratification of the sexual desire is particularly beneficial in its effect upon the activity of the blood-forming organs, and in relieving former menstruation troubles which caused anomalies of the blood. Pregnancy especially exerts its influence upon existing blood-diseases in a

remarkable manner. The latter very often disappear temporarily or even permanently in consequence of the pregnancy, so that the woman owes to this condition the first enjoyment of perfect health and robustness.

In contrast to these favourable effects of marriage upon the blood there are of course also unfavourable ones. Frequently enough we see blood-diseases arising through and in the course of marriage. This is rarely the case in man; at least we know nothing of diseases of the blood in man which may be due to the married state, unless sexual over-indulgence gives rise in its course to temporary abnormalities in the blood-formation, or in other words to anæmic conditions—a most rare event in married life and one which occurs perhaps only during the honeymoon or shortly afterwards. In the woman it is different. In her case diseases of the genital organs of all kinds, including those based on gonorrhœal infection may produce, especially through hæmorrhage, severe affections of the blood. The same thing applies perhaps even to a greater extent to abnormal pregnancy, labour and child-bed.

The special relations of the individual blood-diseases to marriage.—These reciprocal influences between marriage and blood-diseases do not manifest themselves equally in all the individual forms of the latter, but appear prominently now in one form and now in another. It is therefore necessary to consider these relations specially, and this we shall now proceed to do.

The sub-division of blood-diseases cannot, since we do not as yet know the nature and anatomical basis of many of them, take place from uniform points of view. Sometimes the determining feature is supplied by the condition of the blood and the anatomical behaviour of the blood-forming organs, as well as by the outwardly visible pathological changes, sometimes by the kind of the course of the disease (acute, chronic), sometimes by the etiology (essential, constitutional, secondary, infectious blood-diseases), and we distinguish finally also congenital and acquired affections. In the following remarks we shall retain the usual method of classification, but we shall see that from the point of view which interests us here most, namely

that of the influence of marriage, the different blood-diseases deserve different consideration.

I. Anaemia.—We commence with the anæmias. Under this name we include, as is well-known, a large and hardly uniform group of blood diseases which exhibit certain common anomalies in the blood in differently marked degrees, namely poverty of hæmoglobin, a diminution in the number and size of the red corpuscles, and reduction in the dry residue; there always is, besides, an abnormal paleness of the skin and mucous membranes, in addition to a number of characteristic symptoms in other organs, namely pain and a sense of fatigue in the organs of locomotion, disordered digestion, affections of the sexual organs, headache, etc., disturbances which we designate as functional and which are the result of insufficient nutrition on the part of the diseased blood.

If the same clinical picture is common to all the different forms of anæmia, we cannot draw from this the conclusion that the disease of the blood-forming organs is in every case alike, seeing that we know so very little about it. Anæmias are moreover the result of so many different causes that for this reason alone it seems advisable to distinguish several forms of them. This applies especially to the consideration of their relationship to marriage in connection with which the different causes require different appreciation.

Thus one of the most important and most frequent forms of anæmias in the female sex is *chlorosis*; in spite of its common symptoms it especially deserves to be regarded as a separate disease, and will therefore be treated in a special chapter.

Next to chlorosis we have to mention *essential anæmia* which is partly congenital and partly acquired and which developing into a constitutional disease is often brought as such into the marriage.

Associated with this is that form of anæmia, which is produced by an unsuitable mode of life and deficient nourishment, and which plays an important part in married life.

Very prevalent is further the group of *secondary anæmias* arising in consequence of hæmorrhage or other profuse discharges or after all sorts of organic diseases. These also have

a great influence upon marriage especially when they have passed the acute stage and the cause having disappeared they develop into independent chronic diseases.

All these groups of anæmias just mentioned attack the male sex far more rarely than the female, even though we exclude chlorosis for the present altogether from our survey. First of all, the adult man does not incline to that independent form of anæmia which we call *essential*, or also *constitutional*, and which without presenting the typical picture of chlorosis depends nevertheless on a disturbance in the activity of the blood-forming organs; at the marriageable age this anomaly of the blood disappears in males even if it has persisted up to puberty. This constitutional anæmia which is so rare in men appears the more frequently in women. Many of them who were anæmic from birth or from a very early age marry when suffering from the affection. The reason lies first of all in the great predisposition of the female sex to this disease, and further in the circumstance that the mode of life of women at the age of puberty and shortly before marriage does not generally conduce to improvement. It also happens occasionally that women contract essential anæmias in the course of their married life, while men are probably always free from them. More equally divided between men and women are those anæmias which we attribute to an improper mode of life and insufficient nourishment; but here also the female sex shows decidedly a greater predisposition and at the same time a lesser resistibility against the injurious influences. From the secondary anæmias, finally, which have become chronic, women also suffer in greater numbers than men, since the most frequent causes of these conditions are to be found in abnormal hæmorrhages from the genital organs or in diseases of these organs, while hæmorrhages from other organs occur just as often in women as in men, sometimes even oftener, as f. i. from the stomach.

Injurious effects of anaemia on the married state.

—The injurious effects on the married state produced by the anæmia of one or both of the married partners are often considerable though they do not proceed from diseases dangerous

as such to life. Apart from general physical depression which manifests itself in a constant feeling of lassitude, and of general discomfort as well as in manifold disturbances in the various organs of the body, the physical inability to do justice to the duties connected with the married state is often of considerable prominence. The husband derives not only no joy from his work, but his capability to pursue his vocation successfully is diminished, and even where he does succeed by his work he has no energy left to devote himself to his wife and family in his leisure hours as is the duty of the head of the household. Absence of love and tenderness, absence of active interest in the welfare of wife and family, neglected education of the growing children who are left entirely to strange hands are some of the results of the debility and of the desire for quietude which accompany anæmia.

The same may be said with regard to the more frequently suffering wife, and considering her greater share in the conduct of the household and in the rearing of the children, the effect of her illness on the marriage is even more serious still. But the conditions as regards the wife are, besides, far more unfavourable because the anæmias are often provocative of an abnormal state in the genital organs. They give rise *f. i.* to catarrhal conditions of the mucous membranes, to anomalies in the menstruation, which if they existed before marriage as a consequence of anæmia undergo an aggravation in the course of it. Not infrequently there is a complication in the shape of absence of the conceptive faculty. On the other hand, pregnancy, if it does occur, causes in anæmic women an increase in the symptoms which are still further aggravated considerably by the labour and the hæmorrhage connected with it and by the troubles of child-bed; it is well-known that severe anæmia constitutes occasionally a dangerous complication of labour. We also know that in anæmic women involution after labour takes place imperfectly, that lactation runs an abnormal course and that a number of diseases of the genitals are apt to occur in consequence, which may be the cause of endless trouble and of an unhappy married life.

In addition there is the hereditary transmissibility of the

disease to the offspring. It is fortunately no fixed law that the children of parents, one or both of whom were affected with constitutional anæmia, must inherit the disease, but very many of them are born with abnormal debility which can be successfully combated only by great and additional care.

Influence of marriage on anaemia.—If we now ask ourselves: Vice-versa, what influence has marriage on the production and the course of anæmia? we may give something like the following answer:

It may be said, to begin with, that marriage is very frequently the source of origin of chronic anæmias. This is certainly rarely the case as regards the husband. The essential form, as already mentioned, hardly ever develops in married men, and secondary anæmias after hæmorrhages or diseases of all kinds cannot naturally be ascribed to the married state. Anæmic conditions may possibly be caused in a married man by an unhealthy mode of life. This applies particularly to the poorer classes. In their case marriage means occasionally a material deterioration of the economic position, the beginning of poverty, a change to unfavourable conditions as regards housing accommodation, and nutrition. Nor can it be said that this does not occasionally happen among well-to-do people as well. If there is not exactly a fear of starvation, marriage means at times with them also an abnormally increased demand on the earning capacity of the husband, a disproportionately greater amount of work or professional activity under excitements to which the body does not feel equal. In addition to this, there are frequently troubles in the house either on account of the wife's illness or of that of the children, or lasting and far-reaching mental worries and depressions. Not without injurious influence are also the various excesses in which particularly the better classes are wont to indulge under our present-day social environments, especially those prevailing in large towns: prolonged staying-up in over-filled and ill-ventilated rooms after a day's hard work instead of recuperating sleep, and the consumption of excessive quantities of food and drink. It is just in this respect that marriage among the better classes brings obligations along with it which those who are unmar-

ried can, though not always, escape more easily and which they are, at any rate in their younger years more capable of fulfilling. All these injurious conditions are capable of producing in men chronic anæmias if not other serious diseases.

But of still greater import in the causation of chronic anæmias is marriage to the female sex. Apart from the fact that the points just mentioned naturally apply to married women as well as to married men, perhaps to even a greater extent, important causes of chronic anæmia are to be found in the hæmorrhages from, and the diseases of, the genital organs to which women are particularly subject during the course of their married life, far more so than during their virgin state. Severe loss of blood at the end of pregnancy, in labour, and child-bed, diseases of the uterus and uterine membrane in association with it or as a spontaneous occurrence which are complicated with severe hæmorrhages form the cause of chronically anæmic conditions which have developed from originally acute anæmias. Without hæmorrhage also it is possible after long-continued inflammatory affections of the genital organs which have arisen through labour or through infection and also spontaneously or even through lactation for chronic anæmias to develop in married women.

Finally, women are occasionally subject to the essential form of anæmia (without any known etiology) even though they are already married. It is for these reasons that anæmias are so particularly frequent in married women, and that marriage can in some respects be considered as the direct cause of certain forms of anæmia.

But it also is on the other hand possible for marriage to exercise a beneficial influence upon anæmic conditions. As regards man it is only very rarely that marriage is called upon to act the part of a remedial agent in constitutional anæmia, because as already mentioned such conditions do not altogether often occur in the male sex. Where they do exceptionally occur marriage is likely to prove beneficial if it brings along with it an improvement in the mode of life and in the nutrition. The advantage of a regulated married life and the care and attention of a loving wife appear more fully in the

case of those men who have become anæmic through former irregular habits, through injudicious nourishment, through absence of sleep and excesses of all sorts.

The remedial character of marriage in its effect upon the anæmia is still more apparent in the married woman. We shall return to this point when discussing the subject of chlorosis. It is sufficient here to mention that we frequently notice a complete disappearance in married women of essential anæmias as well as of secondary anæmias proceeding from the genital organs. It would seem that the gratification of the sexual desire alone acts alteratively on the anæmias themselves and on certain of their causes, as f. i. profuse menstruation, dysmenorrhœa, catarrh of the mucous membranes, etc. But it is pregnancy which is very often the most pronounced beneficial remedy. Though an abnormal pregnancy and a difficult labour are capable of producing anæmia, a normal pregnancy is on the other hand often beneficial in its effect upon former diseases of the genital organs and former deficient blood-formation.

Should anaemic individuals marry?—The last-mentioned favourable influence of marriage brings up the question whether individuals with fully developed anæmia should be permitted to marry.

As regards chlorosis which is probably the form of anæmia that occurs oftenest in unmarried women the reader is again referred to the special chapter dealing with it.

As regards the other forms of anæmia the following remarks seem to be indicated:

Consideration of the causal lesion in secondary anaemias.—It is of importance to ascertain which form of anæmia is present. For in secondary anæmias it is necessary to consider carefully whether the causal complaint is not such as to be prejudicial or inimical to marriage. Very often there is hidden behind an anæmia which resists all treatment an insidious tuberculosis, which has as yet produced no manifest pulmonary or other symptoms. Chronic nephritis with intervals free from albuminuria, may also be simulated by anæmia where the examination is not very carefully conducted. This applies also to chronic pyrexial conditions, slowly progressing suppuration,

typical malaria, parasitic infection of the intestines, gastric and duodenal ulcers, hereditary syphilis, severe diseases of the genital organs, and malignant tumours at the beginning of their development. All these diseases must be excluded with certainty before it is possible for the medical man to give his consent to the marriage of an anæmic individual.

Of less serious import but nevertheless demanding careful examination are anæmias after continuous loss of blood which have become chronic. Where the cause lies in some innocent ailment such as frequent epistaxis, bleeding hæmorrhoids, menorrhagia without any serious disease of the genital organs there is no need to refuse permission to marry. But in any case the necessary treatment for the removal of the causal disease must be instituted as soon as possible before marriage. Against profuse menstruation it will, however, not always be possible to interfere successfully and we shall have to bear in mind the fact mentioned above that the causes of this anomaly are frequently improved by marriage or removed altogether. The practitioner will therefore let himself be guided by the same circumstances as in chlorosis (which see).

Anæmic conditions which are the consequence of an unhealthy mode of life and of excesses of all kinds are, as has already been said cured during and by marriage under certain circumstances. Marriage may therefore be recommended in such cases, but of course only if an improvement in the method of living and a change for the better is thereby to be expected.

Essential anaemias are with certain restrictions no obstacle against marriage.—Essential or constitutional anæmias proper if not abnormally severe in character are similarly no obstacle against marriage seeing how often a cure is actually accomplished by marriage. And what is no less noteworthy, we often come across married people otherwise healthy but anæmic who are by no means so incapable to fulfil their obligations as one would expect from their outward appearance. Delicate from childhood and accustomed to great cautiousness in their entire mode of life, endowed with a good faculty to estimate their physical strength, they are more careful in the hygiene and dietetics of their married life than many

others who though in full vigour are apt to forget themselves. They know instinctively how to utilise fully to the benefit of their health the advantages offered by the married state, and how to avoid excesses. Every experienced doctor knows such individuals who are affected with constitutional anæmia and are for this reason regarded by laymen as delicate, but who nevertheless manage to steer through their married life happily, to escape serious diseases, to become with advancing age more and more resistant and to live longer even under circumstances of a somewhat unfavourable character than many with robust constitutions. Such individuals may therefore be permitted to marry, even where there is no certainty that the essential anæmia will be cured, especially if, as it often happens the contracting parties are of equal constitution. Opposition to such marriage on the part of the medical man is however justified where the constitutions of future husband and wife are too widely different from one another. For where the one is suffering from constitutional anæmia, and the other is in full possession of health and vigour, the contrast in the two constitutions and in the physical and psychical inclinations associated with them may easily cause disagreements in the course of the married life which will affect not only the moral happiness of both partners but also subject the anæmic husband or wife to bodily influences not in consonance with the former cautiousness and careful mode of life. The medical man's duty is to prevent such conditions and to use his warning advice to the best of his ability.

One of the ill-results of essential anæmia from the standpoint of marriage which has already been mentioned, namely the injurious effect upon the offspring, though not to be underrated will hardly receive much practical consideration at the arrangement of marriages. For in the first place an hereditary predisposition, especially if derived from one side only does not fortunately always manifest itself. But where as it often happens both father and mother are delicate they do occasionally—not always—bring into the world children of a more or less degenerate character and of such a constitution as was considered by the Spartans a sufficient ground for letting them

perish as being unfitted to undertake the obligations of life. Because congenital debility often kills them in the first few months of their lives: rickets and scrofula contribute their share in producing a feeble non-resistant generation which if mentally well enough developed is at least bodily much deteriorated. And though the parents belong to that class of individuals who, as already mentioned exhibit in spite of their anæmia a certain resistibility against the injurious influences of life this quality is often lost in those descendants who possess a double hereditary predisposition. Nevertheless it is impossible for the medical man to prohibit a marriage on account of such hereditary transmissibility. His duty lies rather in the direction of recommending all possible endeavours to counteract the hereditary predisposition of the children by increased attention and greater care and the adoption of precautions from the very earliest moment, such as judicious nourishment, hygienic measures and physical exercise at the proper age, which will tend to transform the inherited weak constitution into a healthy and strong one. Unfortunately this is a consummation which can hardly be expected in the case of the poorer classes and death will continue to claim his numerous victims from among the children of poor anæmic parents.

The medical man will have to devote special attention to the possible influence of pregnancy on anæmic women. As already mentioned it cannot be said with certainty at the beginning of a marriage whether that influence will be beneficial or injurious. Where the latter has been the case or where pregnancy and labour are directly responsible for a state of anæmia it is necessary in extreme cases to insist on sexual continency as long as the disease remains active in order to avoid danger by further loss of blood and exhaustion.

II. Chlorosis.—We will now consider that special form of essential anæmia which we call *chlorosis*. Its close connection with the other anæmias is evidenced by the symptomatology which is in many respects alike and by the circumstance that it is benefited by the same therapeutic measures. Nevertheless chlorosis may be separated from the other anæmias as a special disease peculiar to young females, the more so as most authors

agree in ascribing to it a special relation to the genital organs. It is questionable whether it ever appears at all in the male sex. In any event, cases described as chlorosis appear in male adults only at the age of puberty, that is, at a time of life when marriage is with them as yet altogether out of the question. For this reason we have to consider the female sex exclusively when treating of the influence of chlorosis on marriage and vice-versa. The disease is often present in young women at an age which precedes immediately the entrance into the married state.

Though this is not exactly the place to go into a detailed description of the symptoms of chlorosis which as already said are not dissimilar to those of anæmias in general, it is advisable in view of our present subject to touch briefly upon the relations which the disease has to the sexual apparatus. That such relations do exist is highly probable, but objectively they are not by any means very pronounced. There is no doubt that a portion of the anomalies which the genital organs of chlorotic women exhibit is the result of nothing else but deficient nourishment on the part of the diseased blood. Among these are included as in other anæmias, disturbances of menstruation, catarrhal affections of the mucous membranes and pain in the respective organs. More significant than these disturbances in the genital organs for the assumption that there is a connection between chlorosis and the sexual function are certain subjective sensations. The principal of these is a remarkable alteration in the wishes and inclinations as well as in the psychical attitude which chlorotic women manifest occasionally almost as markedly as women in a state of pregnancy. Apathy, general depression or a striking alteration in the temperament, often become quite marked features altogether independent of the bodily condition. In addition, there is that peculiar abnormal desire for certain articles of food which chlorotic women share with those who are pregnant. Frequently there is nausea in the morning especially at the menstruation periods. Finally, the commencement of the disease is as a rule accompanied by a diminution in the sensual inclinations—there are also exceptions in an opposite sense—; the psychical depression extends also to the sexual sphere.

Should chlorotic women marry?—Since chlorosis generally begins about the time of sexual maturity and lasts for many years, causing all treatment, chlorotic patients or their parents may often find themselves confronted with the question whether marriage is in their case permissible or desirable. The medical man who has often occasion to ask himself whether girls suffering from chlorosis may marry without injury to their own health, without detriment to the eventual offspring, and without disadvantage to their married life. We may perhaps answer this question in the following manner: Where the female concerned is still very young, every possible attempt must be made to cure the disease before marriage is entered into. Experience shows, that the majority of cases of chlorosis are cured before the age of 25, especially if the proper treatment is instituted. It is not however always possible to wait till a cure has been accomplished; a somewhat advanced age, the prospect of a happy marriage, an existing engagement, and other circumstances render sometimes a quick decision necessary. We must therefore rely to a great extent upon what we know from experience, namely that very often, perhaps as a rule, chlorosis disappears completely in young married women soon after their marriage and especially with the beginning of pregnancy. The above mentioned relations of chlorosis to the genital function receive in this way further confirmation through the favourable results achieved by a regulated married life. The doctor may therefore not only give his consent to the marriage of a chlorotic young woman where suitable treatment has been either impossible or unsuccessful, but he may under certain circumstances actually recommend it.

We may thus say that speaking from experience chlorosis has as a rule no injurious effect upon the development of marriage, and what deserves to be specially mentioned, nor upon that of the offspring. On the contrary, marriage is frequently an excellent remedy for the disease, though not always applicable.

It must not however be forgotten that there are now and then cases of chlorosis which are not benefited by marriage, though it must remain an open question whether the diagnosis

chlorosis is in such cases justified, and whether there are any *chlorotic* married women at all. The probability is that these cases do not belong to the domain of *chlorosis*, but to that of constitutional anæmia. However it may be, we shall under such unfavorable circumstances expect to see the same injurious effects arising in the married life in consequence of the disease both as regards the welfare of the wife as well as the happiness of the family and the health of the children, as we had occasion to mention above when discussing the anæmias generally.

Of acquired blood-diseases it is principally the anæmias which we have so far dealt with rather minutely, that are of importance as regards their relations to marriage. The question is not so important in connection with other acquired diseases and these will therefore receive the following brief consideration only.

III. Hæmoglobinaemia.—In the first place we will mention hæmoglobinaemia (*hæmoglobinuria*), and namely that idiopathic form which appears mostly after a cold, and which in contrast to the symptomatic form produced by toxic agencies (and also by syphilis) generally runs a mild course and disappears without leaving any injurious influences, as soon as the cause is removed. It is not necessary to prohibit the marriage of patients who suffer from this hæmoglobinaemia, which is also called *paroxysmal hæmoglobinuria*, as the disease can have no significance as regards marriage, the more so as it never re-appears so long as the injurious influences are avoided. It is only those cases that become complicated by chronic nephritis which acquire a serious importance from the standpoint of married life.

IV. The hæmorrhagic diathesis.—The same may be said with regard to the group of blood-diseases which are included under the name of *hæmorrhagic diathesis*, affections manifested by hæmorrhages through the skin and mucous membranes without a diminution in the coagulability of the blood. They are diseases which run quite different careers and which while having the tendency to hæmorrhages as a common symptom vary with respect to other important signs. Simple purpura, which consists exclusively of cutaneous hæmorrhages

is a mild, generally apyrexial, complaint which often accompanies rheumatic affections; where the latter predominate the disease which resembles greatly in this respect certain skin diseases is called by the well-known name *peliosis rheumatica*. The purpura hæmorrhagica (*morbus maculosus Werlhofii* [Werlhof's purpura]) the pleonastic name of which is probably meant to convey an idea of the seriousness of the hæmorrhages, is sometimes a harmless apyrexial ailment, and sometimes a feverish probably infectious or toxic disease of most serious prognosis. It is not likely that both forms spring from the same cause. As to *scurvy* (*scorbutus*) it is due to faulty nutrition, namely prolonged deprivation of fresh meat and vegetable juices. It is characterised by hæmorrhages from the gums which are especially prominent in addition to hæmorrhages from the skin and also from other mucous membranes.

All these so-called hæmorrhagic diatheses may acquire special significance in the married state during pregnancy only, and in labour particularly, since most dangerous hæmorrhages have been observed in the latter.¹ This applies, of course, only to the severer forms which are designated as *morbus maculosus*. Scurvy is exceedingly rare in Germany and hardly ever affects the female sex.

As regards pregnancy, to begin with, *Fellner*² has established that of 7 cases which he found in the literature of the subject, 3 ended fatally. The embryo also suffers through the disease in the mother. Miscarriages occur in consequence of endometritis hæmorrhagica or of placental hæmorrhages.

The labour process itself is naturally highly dangerous and all the necessary precautions must be taken in time to avoid death from hæmorrhage. Postpartum hæmorrhage during child-bed can also frequently cause serious danger and requires careful attention.

¹*Weise*, Ueber uterine Blutung bei morbus maculosus. Inaug.-Diss. Brl. 1884.—*Wiener*, Ueber hæmorrhagische Erkrankungen bei Schwangeren u. Wöchnerinnen. Arch. f. Gynæk. 1887, Vol. 31.—*Stumpf*, Ueber hæmorrh. Erkrank. im Wochenbett. Arch. f. Gynæk. 1888, Vol. 39.—*Phillips*, Influence of Purp. hæm. on menstruation and pregnancy. Gynecological Society. London 1891.

²*Fellner*, Die Beziehungen innerer Krankh. etc. Leipsic and Vienna 1903.

Diehl has demonstrated the possibility of the hæmorrhagic diathesis being conveyed to the child. The disease though not constitutional is therefore occasionally hereditary.

But though this hereditary character of the disease cannot be of any great importance as regards the contraction of marriages, pregnancy in the course of it must be regarded as a very undesirable complication which ought to be avoided if possible; indeed, where the hæmorrhage from the skin and mucous membranes is severe and the consequent anæmia great and progressive the artificial interruption of the pregnancy is indicated though it must be admitted that this procedure cannot be instituted without running the risk of death from hæmorrhage.

V. Haemophilia.—We come now to the consideration of a congenital disease of the blood which is along with the anæmias of the utmost importance with regard to marriage. It has been studied carefully for the first time at the end of the 18th century (*Fordyce, Rave*) and is called since *Schönlein* named it so, *hæmophilia*.

Nature of the disease.—The nature of the disease is not yet sufficiently known and it is possible that it depends on an insufficient coagulability of the blood (*Grandidier, Lossen, Alex. Schmidt*), that is, an anomaly in that fermentation process which comes into action immediately the blood leaves the blood-vessels or as soon as a considerable disturbance of the circulation takes place within the latter, particularly through some alteration in their walls. It is as yet questionable whether absence or insufficiency of fibrin-ferment constitutes the cause of the disease; possibly the lime-salts necessary for coagulation are not present in sufficient quantity. The researches in that direction have however hitherto proved fruitless. The blood of hæmophilics behaves somewhat like blood when it has been altered by the addition of leech-blood which acts towards coagulation as an anti-fermentative. Some authors think the disease is also due to an alteration in the blood-vessel-walls (fatty degeneration of the intima of the capillaries, according to *Kidd* and *Birch-Hirschfeld*), others attribute it to abnormal narrowness of the vascular system and want of proportion between its

calibre and the quantity of blood (*Virchow, Zimmermann, Oertel*). *Koch* believes in infection without adducing any proofs in support of his opinion.

General dangers.—It is well known that hæmophilics are on account of the diminished coagulability of the blood in constant danger, the more so as with the exception perhaps of old age, the condition persists throughout life and seldom undergoes an improvement. Slight injuries accompanied by hæmorrhage especially in such parts of the body which are difficult of access for purposes of arresting the bleeding, that is, internal organs, and diseases of the latter which also may lead to hæmorrhage, as f. i. gastric and intestinal ulcers, hæmorrhagic inflammations of the kidneys and bladder, diseases of the genital organs accompanied by hæmorrhages, may at any time bring the hæmophilic within an ace of bleeding to death.

Dangers during married life.—There is consequently not the least doubt that marriage constitutes in the case of hæmophilics under all circumstances a serious danger. When the husband suffers from the disease, the worry and anxiety lest something serious should happen in connection with the slightest accident are a constant source of trouble. More than ordinary care will have to be exercised in order to avoid as far as possible injuries or diseases which result in hæmorrhage, particularly affections of the digestive tract, and thus save the family from the possible loss of the bread-winner.

Hæmophilia is however of totally different significance when the wife is the affected party. In her case hæmorrhages from the genital organs (even during coitus) particularly in labour and in child-bed, are of extraordinary danger. Strange to say, normal menstruation proceeds in hæmophilic women as a rule without causing any serious troubles. But, on the other hand, abnormal conditions, especially metrorrhagias generally take a far more unfavourable course. The danger reaches its highest point at the labour-act; death from hæmorrhage occurs in parturient hæmophilic women exceedingly often.

Distribution of hæmophilia.—Fortunately experience teaches us that women suffer from hæmophilia far more rarely than men. Thus *Grandidier* observed in 200 hæmophilic fami-

lies only 48 females out of 657 bleeders. *Stahel* found in 4 generations only male hæmophilics.

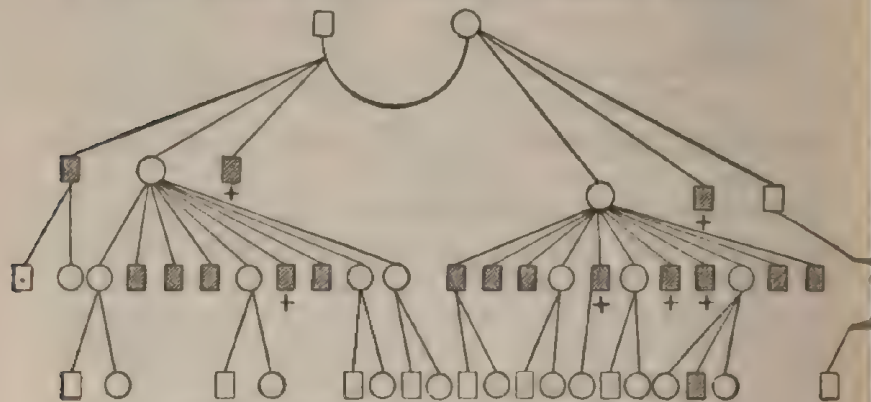
The geographical distribution of the disease is according to *Grandidier* as follows:

	Hæmophilic families	Number of bleeders	M.	F.
Germany	93	258	236	22
England	46	141	134	7
France	20	80	75	5
North America	15	61	60	1
Russia	7	11	7	4
Switzerland	5	48	48	—
Sweden and Norway	3	9	6	3
Holland	2	9	7	2
Belgium	1	4	4	—
Denmark	1	3	2	1
East Indies	1	6	5	1
	194	630	584	46

Germany presents therefore the greatest number even in proportion to the whole population.

Of the greatest importance however for the marriage of hæmophilics is the hereditary transmissibility of the disease to the offspring. The hereditary conditions of the affection are strikingly similar almost in every detail to those of colour-blindness (*Horner*, and others) and hemeralopia (*Ammann*). It is said moreover that hæmophilic families have very numerous descendants. (*Wachsmut.*) Of course not all the children are attacked by the disease, and *Grandidier* has in this respect demonstrated a certain mode of heredity. Men who come from hæmophilic families procreate with healthy women who do not spring from hæmophilic families as a rule healthy children though they are themselves bleeders. Women who are descended from hæmophilic families procreate on the other hand with healthy men almost always a few hæmophilic children, even though they are not themselves bleeders. It is therefore the females who are responsible for the heredity of the disease; it is they who are the *conductors*. Their capability to transmit hæmophilia extends as a rule to their male descendants. *Grandidier* and *Vieli*, and after them *Hösli*, have examined carefully into the family histories and the hereditary character of the disease in the well-known bleeder-village Tenna in the canton Graubünden and have arrived at the following conclu-

sion: Hæmophilia is oftenest transmitted hereditarily from the hæmophilic father through the non-hæmophilic daughter to the male grandchildren, and similarly from the non-hæmophilic or hæmophilic mother through the non-hæmophilic daughter to the male grandchildren; rarest, directly from father to son. Another family of bleeders that has become known besides those in the village of Tenna is the family of Mampel from Kirchheim near Heidelberg, described by *Chelius* in 1827, by *Untzenbrecher* in 1841 and recently by *Lossen*. Appended are a few charts of the disease in hæmophilic families:



Genealogical tree of the family Mampel, after Lossen.

- = Bleeder
- = Female
- = Male
- ⊕ = Bled to death.



Genealogical tree of the hæmophilic family described by Gocht.

May hæmophilics marry?—The question whether hæmophilics may marry acquires under such conditions a special interest. Since heredity plays such an important part, and the female members particularly are regarded as conductors of the disease, it is the duty of the physician according to *Grandidier* to oppose marriage under certain circumstances. We may accordingly lay down the following formulæ:

1. Female members of hæmophilic families should not marry even if, as is generally the case, they are not themselves bleeders.

2. Male members who are not themselves bleeders may marry without running any risks.

3. Male bleeders should not, on account of the hereditary character of hæmophilia, be dissuaded from marrying women belonging to non-hæmophilic families unless it is proved that in their families hæmophilic men also have produced hæmophilic children.

The doctor cannot expect to see his advice always acted upon. It is true that in the village of Tenna the female members of the hæmophilic families have vowed among themselves never to marry, but such a decision even if carried out cannot hope to find many imitators. As already mentioned, the families of bleeders are as a rule very large and the number of daughters requiring parental support would be too great and burdensome were they in all cases to remain unmarried.

It is worth while to mention briefly that as age advances hæmophilia diminishes in severity and that those who attain old age lose the disease almost entirely. Finally, we must bear in mind that hæmophilia occurs occasionally as a constitutional disease, either congenitally (case of *Wendt*) or acquired in individuals not hereditarily predisposed to it; the 22d year is in the latter case regarded as the extreme age for the commencement of the affection. Such individuals may form the starting-point of hæmophilic families.¹

¹From the more recent literature on hæmophilia, the following deserve especial mention:

1. *Kehrer*, Archiv f. Gynäk. 1871.

2. *Lossen*, Deutsche Zeitschr. f. Chirurgie 1876.

VI. Severe diseases of the blood.—As a last group we have left for consideration the diseases of the blood which are included among the most serious diseases we know, and all of which almost without an exception, are fatal. Among them we reckon leukæmia, primary pernicious anæmia (*Birmer*), pseudoleukæmia, and splenic anæmia. (*Banti's* disease cannot be regarded as a disease of the blood proper notwithstanding the severe affection of the blood-forming apparatus, especially that of the spleen.)

We need devote but little space to the consideration of these fatal diseases of the blood. Patients suffering from one of them will hardly ever entertain the idea of marrying, and the medical man also will, of course, have no hesitation in declaring himself against it under any circumstances. Where one of these dangerous maladies occurs in the course of married life, it acts as a catastrophe which soon brings the married state to an inevitable dissolution. And so there is really nothing more to be said of these diseases in their relation to married life.

Influence of pregnancy on, and hereditary character of, blood-diseases.—A few words on the influence of pregnancy on the course of these diseases and on the possibility of their hereditary transmissibility are nevertheless not out of place.

As regards leukæmia, to begin with, pregnancy is extremely unlikely to occur in the course of it. *Fellner*¹ was able to establish with certainty that only in 3 out of 14 cases known in literature the disease had existed before conception. It is therefore possible that the predisposition to leukæmia is increased

3. *Forster*, Gerhardts Handbuch der Kinderkrankheiten 1878.

4. *Kidd*, Med.-chirurg. Transact. 1878.

5. *Hosli*, Inaug.-Diss. Basel 1885.

6. *Wendt*, New-York Med. Record. 1887.

7. *Fischer*, Inaug.-Dissert. München 1880.

8. *Koch*, Die Bluterkrankheiten. Stuttgart 1889.

9. *G. Cohen*, Zeitschr. f. klin. Med. 1890.

10. *Wehle*, Ueber Haemophilie bei d. Geburtsakt. Ges. f. Gyn. Dresden 1893.

11. *Litten*, Penzoldt-Stinzing. Handb. f. Therapie.

12. *Gocht*, Archiv f. klin. Chirurgie, Vol. 59, 1899.

¹*Fellner*, Die Beziehungen innerer Krkhn. etc. Leipzig und Wien 1903.

by pregnancy, an opinion which *Sänger*¹ does not share. In any case pregnancy exercises a very injurious influence upon the course of the disease. Rapid growth of the spleen and an exceedingly high increase in the number of the leucocytes have been observed in connection with it. In one case reported by *Stillmann* the proportion was as high as 1 in 3.

And yet the conceptive faculty is not prejudiced by leukæmia. *Cameron*² has seen repeated pregnancies during the progress of the disease. Labour occasions sometimes rapid aggravation and leads to coma and death.³ The predisposition may be hereditarily transmitted to the children. In *Cameron's* case all the children had a tendency to leukæmia and one of them died from it in 5 months. Besides, most pregnancies in the course of leukæmia end fatally a few hours or days after the premature expulsion of the embryo. Only 4 cases are known which did not terminate with death. *Sänger* thinks that the induction of premature labour should be postponed until the child is perfectly viable; he recommends artificial abortion only in extreme cases. As a matter of fact *Fellner* reports that 3 artificial abortions saved the respective 3 women. Opinions like those of *Sänger* have been expressed by *H. Schröder*.⁴ The severity of the symptoms must be the guide for the treatment to be adopted in order to prolong the life of a leukæmic woman.⁵

What has been said above applies also to the other fatal diseases of the blood, that is, primary pernicious anæmia, splenic anæmia, and pseudoleukæmia.⁶ In their case, too, pregnancy

¹*Sänger*, Über Leukaemie bei Schwangeren und angeborene Leukaemie. Arch. f. Gynäkol. 1888. Vol. 33.

²*Cameron*, Influence of leukaemia on pregnancy. Internat. Med. Congress of Washington. Sept. 1887. and American Journal of Sciences 1890.

³*Green*, Acute Leukæmia during pregnancy. New-York Med. Journ. 1888.

⁴*Schröder*, Über wiederholte Schwangerschaft bei lienaler Leukaemie. Arch. f. Gynak. Bd. 57.

⁵*Jaggard*, Leukæmia and pregnancy. Med. News July 1890.—*Hilbert*, Ein Fall mit Schwangerschaft komplizierter acuter Leukæmie. D. Med. Wochenschr. 1893 Nr. 36.

⁶*v. Jaworsky*, Über die schwere Anaemie Schwangerer. Centralbl. f. Gyn. 1897.—*Saniter*, Hochgradige Anaemie in der Schwangersch. Centralbl. f. Gyn. 1899 Vol. 19.—*Commandeur*, Un cas d'anémie pernicieuse puerpérale etc. Progr. Méd. Lyon 1900.

constitutes a most dangerous complication, and cases of these diseases are known where the illness commenced subsequent to the beginning of the pregnancy. (*Fellner.*) Labour is almost always fatal, while prior to it, that is, during pregnancy, the clinical picture is not much more serious than in the absence of pregnancy; on account of the hopelessness of the cases and the danger of labour all that is perhaps justifiable in the interest of the child is to induce premature labour.

X

Diseases of the Vascular System in Relation to Marriage

X

DISEASES OF THE VASCULAR SYSTEM IN RELATION TO MARRIAGE

By **Professor E. v. Leyden** (Berlin) and
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Married individuals attain an average age of 60 years, those unmarried an average of 45 years. This we see from statistics. According to *Darwin* the lower mortality of the married class as compared to the unmarried class depends mainly upon the exclusion of imperfect types; it is therefore a result of natural selection. Perfect individuals marry in greater numbers than imperfect ones. Besides, it may be assumed that the greater regularity of the mode of living resulting from the married state exercises a beneficial influence also upon the duration of life of both husband and wife. Marriage is from the hygienic standpoint as well as from the æsthetic and social points of view a desirable object for every normal adult individual. It must however be remembered that marriage brings along with it certain responsibilities, the fulfilment of which requires perfect health of body and mind.

The subject "Diseases of the vascular system in relation to marriage" imposes upon us the duty to elucidate from the medical point of view: firstly, in which cases conditions exist before marriage which would constitute the latter a more or less pronounced danger to the health of the husband or the wife, in other words, when the physician's duty is to warn against marriage; secondly, we have to answer the question, what should the attitude of the medical man be where under analogous predisposing circumstances either the husband or the wife is attacked by disease. In order to be able to answer these two

questions we must ascertain first the nature of the injuries which may result from marriage as such. Thirdly and finally, it is of the utmost importance to establish how far the disease of one of the married partners may influence the health of the children born from such marriages; that is to say, how far diseases of the vascular system are hereditary.

The principal thing with regard to the diseases in question is the reaction of marriage on the patient. As far as the wife is concerned, the danger lies in the majority of cases in pregnancy, more rarely in the sexual intercourse; as far as the husband is concerned, in the latter only.

The worries about the children and about their education, the nursing which they require in health and in disease, are not quite avoidable in any family. They are however as a rule richly compensated for by the joy that the marriage has not remained sterile.

In considering the reciprocal relations between marriage and various diseases, it is necessary to study the different injuries which marriage may occasionally produce in each case individually, seeing that they are not typical. Financial troubles, *f. i.* do not only injure both sides, but they affect the diseased husband or wife more than the healthy one. Psychical disturbances happen no doubt to every married couple; the happier the marriage, the more rare and less effective they are.

Occupation and social position of husband and wife.—The occupation and social position of the husband particularly, as the head and bread-winner of the family, must receive the special attention of the physician. A wife suffering from heart-disease, is according to the pecuniary position of her husband able to take care of herself or obliged to assist him in the earning of the livelihood. A working-woman who marries makes a change for the better, provided her husband earns sufficient to maintain her and her family. But she does not improve her position by the act of marriage as such. The change is however for the worse, where she has to contribute by her own work to the maintenance of the family.

In the first instance her health will benefit by the marriage,

in the second it will suffer. Where marriage occasions an improvement in the material circumstances, the injuries caused by the married state may partly be counteracted.

Prudent marriages in the sense of Darwin.—

Where a contemplated marriage is prompted not by inclination, but by other motives—and of such there are very many—the physician's task in advising against it is a far lighter one than where he has to oppose the union of two individuals who love each other truly. We know from experience that in the latter case the doctor preaches as a rule to deaf ears, and that in the majority of cases his advice is not followed.

For the sake of the health of the offspring, it should be a general law that the parents shall be free from the predisposition to those diseases which are proved to be hereditary and which in fact are frequently inherited. According to the social position of the married couple, this standpoint is of more or less importance. At the arrangement of marriages of crowned heads for instance, the question of the state of health of the chosen wife or husband receives the most careful consideration. But in the case of ordinary mortals also, the point should never be neglected.

Whoever intends to contract a prudent marriage in the sense of Darwin, will himself select a healthy partner coming from a healthy stock.

In passing now to the special consideration of the diseases of the vascular system, it is clear that generally speaking our principal duty is to answer two questions: 1st, how far is heredity concerned in the diseases under notice; 2nd, how does marriage affect the patients themselves? The points of view resulting from the answers to these questions govern our medical action.

We divide our subject into:

- I. *The significance of diseases of the heart with reference to the married state.*
- II. *The significance of diseases of the arteries with reference to the married state.*
- III. *The significance of diseases of the veins with reference to the married state.*

IV. *The significance of diseases of the lymphatics with reference to the married state.*

We begin with the most important section.

I. Diseases of the heart.—It is an incontrovertible fact that there are families in which diseases of the heart occur particularly often. Nothing is therefore more likely from a superficial consideration than the assumption that diseases of the heart are to be regarded as hereditary. And as a matter of fact this heredity is looked upon as a reality by both the educated and uneducated public. From a medical point of view, however, which limits strictly the conception of heredity we arrive at quite a different conclusion. Most affections of the heart are not as such hereditary, but acquired. Their frequent occurrence in certain families can be accounted for by other reasons. Not the diseases themselves are inherited, but the predispositions which may lead to diseases of the heart, and these predispositions we will shortly discuss in detail. Hereditary in a true sense are only a small number of congenital affections of the heart, and namely only those the origin of which we suppose to be due to congenital malformations. We will therefore consider first the congenital diseases of the heart.

1. *Congenital diseases of the heart.*

Consent to marriage in cases of congenital disease of the heart.—The question of heredity interests us here in an entirely special sense. We have to ask ourselves: Is it our duty in the case of a man or woman affected with a congenital disease of the heart to dissuade from marriage, on account of the possibility that such marriage may result in the production of children also affected with heart disease? Or, shall we, where either one or the other side of a married couple has a congenital affection of the heart, recommend the avoidance of pregnancies? Such a course of action on the part of the medical man is most assuredly not justified. True, that heredity is in occasional observations strikingly manifest (*Vierordt*),¹

¹*Vierordt*, Die angeb. Herzkrank. Nothnagel's Spec. Path. u. Ther.

but on the other hand other causes are just as frequently given, f. i. syphilis of the parents, consanguinity and tuberculosis. It is a well-known fact that the inclination to malformations is hereditary. But we have as medical men no right, for instance, to prohibit the marriage of a man who has hare-lip, because there is a risk that he may eventually bring children into the world affected with malformations, perhaps in some other part of the body. Besides, there is the important circumstance to be remembered, that in diagnosing at a later period of life congenital disease of the heart we are not always in a position to decide whether the affection rests on malformation or arrest of development, or on foetal endocarditis or on both these factors. With respect to heredity, infectious foetal endocarditis is of course of no consequence.

But even if, judging from what has been said above, we were justified in declaring our opposition against such marriages, we should only in very rare cases have practical opportunities of doing so, since no more than an insignificant number of individuals with congenital heart-disease attain marriageable age. On the other hand, we are often confronted with the second of the two questions, namely: is there any danger in marriage for people with congenital heart-disease?

Let us now consider somewhat more closely each of the congenital affections of the heart.

Almost half the number of the published cases of congenital affections of the heart relate to pulmonary stenosis. (*de la Camp.*)¹

Further, *Peacock* has established that of the individuals with congenital heart-disease who become more than 12 years old, more than 4/6 are affected with stenosis or atresia of the pulmonary artery. But the patients who live more than 12 years also have, apart from a few exceptions, only a limited duration of life. *Vierordt* calculates the average duration of life in pulmonary stenosis at 9.36 years. Patients with pulmonary stenosis who have withstood well their early childhood generally succumb to tuberculosis; in some of them disturbances of com-

¹*de la Camp.* Congenit. Herzleiden in "Deutsche Klinik."

pensation appear at a time when life begins to make great demands upon body and mind, that is, when people are grown up. To these increased demands the diseased heart is not equal. Supposing, however, that we have before us a patient with pulmonary stenosis, we shall naturally be guided in the presence of this valvular disease by the same principles which apply in the case of acquired valvular diseases, and which we shall discuss later on.

There remains but very little yet to be said with regard to the other congenital affections.

The congenital disease next in frequency is according to *de la Camp* the stenosis of the aorta at the entrance of the ductus arteriosus, which has a fairly favourable prognosis. Favourable, and when not complicated, as a rule undiagnosable is the patency of the foramen ovale. Finally, the prognosis is also favourable in those cases where the ductus arteriosus remains open. More than half the number of patients exceed the age of puberty. Observations have also been published of severe forceps-labours and consequently of pregnancies which were well born. (*de la Camp*.) The other congenital diseases of the heart offer an absolutely unfavourable prognosis as regards life and do not therefore come within the sphere of our considerations.

Congenital stenosis of the aorta.—In considering the congenital defects of the heart we must not forget to mention finally an important anomaly, namely the congenital narrowness of the aortic system. According to *Vierordt*, those individuals in whom this narrowness of the aortic system attains serious proportions succumb as a rule in early manhood from weakness of the heart, because the latter is not equal to the normal task life imposes upon it. *Vierordt* himself points out that with greater care a more advanced age would probably often be reached. For this it would above all be necessary to watch the symptoms which such an hypoplasia of the aortic system produces. Now, the main symptom is chlorosis, the close connection of which with the disease we are now considering was first demonstrated by *Virchow*. Although according to him the question of the congenital stenosis of the aorta is not

a purely gynæcological one, that is, although the abnormality occurs in men as well as in women, chlorosis is nevertheless pre-eminently a disease of the female sex. The most favoured age is the time of puberty and the years subsequent to it.

The very fact that chlorosis is in many cases curable renders it from our point of view a very important disease. The task of the physician is in such cases a gratifying one, for although he will as a rule in the presence of chlorosis advocate a postponement of the marriage, he will seldom find it necessary to forbid it altogether.¹ Where chlorosis makes its appearance in a woman already married, the avoidance of pregnancy must be recommended until an improvement has taken place. During the act of labour hæmorrhage must be restricted as much as possible.

As regards the diagnosis, the systolic murmur present in chlorosis will hardly occasion a confusion with mitral regurgitation if all the symptoms are carefully considered. In 1900 *Rosenfeld*² published a few cases from *Naunyn's* clinic of mitral stenosis in chlorosis which were due to a congenital stenosis of the mitral orifice. The more the affection of the heart predominates in such cases over the chlorosis, the more unfavourable the prognosis naturally is. Nevertheless we shall apply *Peter's* formula quoted by *Rosenfeld*: "Filles pas de mariage, femmes pas de grossesses, mères pas d'allaitement" in the severest cases only. (No marriage for girls. No pregnancy for married women. No lactation for mothers.) From our point of view these cases are similar to acquired mitral stenosis to which we shall return while considering the acquired valvular defects which claim our attention next.

2. *Acquired valvular defects.*

Acquired diseases of the heart.—In acquired valvular diseases of the heart, heredity does not in a strict sense play any part whatever. But, as already mentioned, there are no doubt families in which demonstrably non-congenital diseases

¹Compare *Rosin*, p. 308.

²*Rosenfeld*, Ein Beitrag z. Lehre d. chlorot. Mitralstenose. Inaug.-Dissert Strassburg.

of the heart also occur exceedingly often. This frequent occurrence is explained by the etiology, to which we will now devote a few brief remarks.

Valvular lesions are mostly the remains of endocarditic affections, which in their turn are oftenest caused by acute articular rheumatism. But the exciting agents of almost all other infectious diseases are also capable to settle on the valves and to produce endocarditis. We have only to mention gonorrhœa, pneumonia and influenza. Experimentally it has been possible to create endocarditis in animals by means of almost all bacteria, though not without previous injury to the valves. (*F. Meyer*.¹) It has also been proved that the chronic infectious diseases, syphilis and tuberculosis, may occasionally give rise to diseases of the heart. (*Michaelis*.)²

The second most frequent cause of chronic endocarditis is arterio-sclerosis; here the same process which affects the blood-vessels takes place in the valves, most frequently at the aorta. The valvular defects noticed in connection with gout are also as a rule a consequence of concurrent arterio-sclerosis. A few cases have been described where genuine uratic endocarditis has been inferred from a deposit of salts on the valves, but the presence of uric acid has been demonstrated only a few times including a case of *Lancereaux* in which however the patient in question had never suffered from gout. For this reason *Minkowski* considers endocarditis in gout to be purely arterio-sclerotic.

As experience shows that the predisposition to articular rheumatism is sometimes hereditary, and as heredity plays in arterio-sclerosis an important part, of which more anon, this explains sufficiently how it is that cardiac affections occur frequently in certain families. But neither the one predisposition, nor the other justifies the physician to withhold his consent to a marriage. His duty is, however, where such a tendency to heart-disease exists in a family, to call the attention of the parents to it, so that they may as far as possible avert it in their children either by inuring them against the rheumatic inclination or by inducing them to lead a suitable mode of life.

¹*F. Meyer*, *Experim. Endocarditis in v. Leyden-Festschrift*.

²*M. Michaelis*, *Ueber Endocarditis in "Deutsche Klinik."*

We will now pass to the most important question: how does marriage affect the patient subject to heart disease?

Already in the year 1893 one of us (*v. Leyden*) has in a lecture "On the complication of pregnancy with chronic disease of the heart" before the society of medical officers to the Charité-Hospital, taken up a position in this question, which must occupy a front place in the present contribution. Although the views expressed on that occasion have often been opposed down to the present day chiefly by gynæcologists who are as much interested in this matter as the physicians who devote themselves to internal medicine, we still think we are entitled to adhere to our opinion notwithstanding the fact that our hopes for an improvement in the methods of artificially inducing premature labour have hitherto not been realised.

Pregnancy and valvular disease.—Let us consider first those disturbances which are capable during pregnancy and labour of influencing injuriously the condition of women affected with heart disease. The number of these disturbances is very great, and we emphasize that it is not sufficient to look for one single causal factor, but that it is necessary to pay regard to the whole of the circumstances which act unfavourably on the affections of the heart. Some authors prefer to look at the matter from one point of view only; a few have accused the hypertrophy of the heart, others the insufficiency of the respiration or the upward pressure of the diaphragm, and others again, the diminution in the blood-pressure after labour. *Zweifel* has expressed himself thus: labour is an over-exertion, and this over-exertion on the part of the heart causes injuries. This factor is undoubtedly of great importance, but many others are also concerned, and any one of them in particular or several in combination may in each individual case turn out to be of decisive moment.

The threatening influences affect:

1. **The heart.**—The question of the hypertrophy of the heart in pregnant women has in medical literature always played an important part, and is playing it partly even at the present day. In France *Larcher* has first in 1825-26 laid down the theory of the hypertrophy of the left ventricle during preg-

nancy. He examined the hearts of 130 women most of whom had died in child-bed, and came to the conclusion that under normal circumstances the heart is enlarged during pregnancy, that this hypertrophy affects as a rule the left ventricle and the left auricle, that it amounts to between $\frac{1}{4}$ and $\frac{1}{3}$ of the normal thickness, and that it disappears gradually during lactation. The results of this examination, supported in France especially by *Ducrest* and *Durosiez*, have often been doubted in Germany and namely by *Fritsch*, *Löhlein* and *Wessner*. They relied chiefly upon the authority of *Gerhardt* who had demonstrated that the measurements given by *Larcher* and *Ducrest* fall within the limits of normal conditions. Nevertheless, the supposition that a certain amount of hypertrophy of the heart occurs in pregnancy finds as yet occasional supporters, and even *Macdonald* thinks that a certain degree of it is probable on account of the greater work which the heart has to perform during pregnancy. Among English authors *Peacock* is of the opinion that a certain amount of hypertrophy does exist.

Anyhow, we cannot at the present day attach any particular importance to this hypertrophy, not even in the case of women affected with chronic heart-disease. It is however in so far a point worthy of consideration as it confirms somewhat the grounds upon which it is assumed that the heart is called upon during pregnancy to perform a greater amount of work.

2. **The influence of pregnancy** upon the heart is further proved, as *Löhlein* has shown, by the fact that not infrequently accidental murmurs are observed in pregnant and puerperal women, apart from any fresh occurrence of endocarditis, which disappear soon after labour, during child-bed.

3. As regards the **activity** of the heart, it is said that its beating is usually accelerated during the last months of pregnancy.

4. Of still greater interest is the reduction of the **pulse** to 60, 50 or even 40 beats, which is noticed in puerperal women, and which was first described by *Blot*.

Blot asserts that this phenomenon occurs more frequently in multiparæ, and that it is an indication of the state of health

of the puerperal woman, but that it is not on the other hand influenced by the state of nutrition, the duration of the pains or the period of so-called milk-fever. He denied, however, its causation by some sort of exhaustion, relying for this upon the well-known sphygmographic researches of *Marey* who has demonstrated that an increase in the arterial pressure is accompanied by a diminished pulse-rate.

With all due respect to the sphygmographic results of *Marey* we must admit that observation at the bed-side rather tends to prove that the striking diminution in the pulse-rate is a sign of cardiac weakness and of a serious decrease in the blood-pressure. This is probably the prevalent opinion among experienced medical practitioners. We clinicians frequently observe an analogous slowness of the pulse after the crisis of acute diseases, oftenest in young people and even in children. We see in this a sign of a good solemn crisis, but at the same time an indication of weakness of the heart which requires the most careful treatment, stimulants and roborants as well as the best possible nourishment and quiet rest in bed. But the pulse may withal occasionally be strong and tense, and we do not desire to lay down any decision whether the blood-pressure is abnormally high or low; clinical experience is, however, incontrovertible that where the pulse is markedly slow we must apprehend conditions of syncope and collapse.

We should like to apply these experiences to the puerperal state and to regard the slowness of the pulse as a sign that there occurs in child-bed a certain weakness of the activity of the heart and of the circulation which necessitates a stimulating and sustaining procedure. It is undeniable that such a cardiac weakness must be of importance to a diseased heart and that it must favour collapse on the part of it. The profuse sweats frequently seen at the beginning of child-bed also speak for a certain measure¹ of debility. *Fellner*¹ attributes the decrease in the pulse-rate to a diminution and deterioration of the quantity of blood associated with a relatively too large heart.

5. **Anatomical changes** in the heart, and espe-

¹*Fellner*, Die Bezieh. innere Krank. etc.

cially in the myocardium have been observed post-mortem in parturient women comparatively often, even when death was not due to an infectious disease. *Virchow* has pointed out the occurrence of fatty and other degenerations of the muscle of the heart in puerperal women, and *Ponfick* says that he has seen the anæmic form of fatty degeneration of the heart in protracted labours especially.

6. Mention must also be made that owing to the labour-pains a certain **over-exertion** may easily take place on the part of the heart. *Zweifel* especially has rightly laid stress on this point. The case of rupture of the aorta during labour, communicated by *Simpson*, illustrates the condition sufficiently. The fact that embolism occurs comparatively often in labour also points to an increased pressure in the vascular system. By most careful measurements of the blood pressure in pregnant, parturient, puerperal and suckling women, *Fellner* has demonstrated that the pressure is somewhat higher during pregnancy, that it reaches its highest point at the height of a labour-pain, falling again during the interval, and that it sinks with the rupture of the membranes in proportion to the rapidity with which the liquor amnii escapes. According to *Fellner*, the highest blood-pressure is observed at the moment the head passes through the vulva. After delivery, the blood-pressure falls to far below normal.

Finally we must remember that the administration of chloroform in labour has a debilitating influence upon the muscles of the heart.

On the whole, the conditions described above have in our opinion doubtless the result that the heart is in various ways endangered during pregnancy and labour. During pregnancy, and especially in the later months, greater demands are made upon its activity; these demands are in labour increased up to the point of over-exertion; at the end of the labour-act the action of the heart falls to such an extent that even under normal circumstances the greatest vigilance on our part is required. Where the circumstances are normal all these perturbations are more easily withstood or corrected, but it cannot be denied that they may prove disastrous to a diseased heart.

Disturbances on the part of the lungs during pregnancy.—On the part of the lungs there also arise disturbances in the course of pregnancy. In the last months of pregnancy the encroachment on the abdominal space forces the diaphragm upwards and causes thereby a diminution in the lung volume (retraction) and a limitation in the respiratory capacity. It is clear that these conditions, first appreciated by *Spiegelberg*, must have a disturbing influence upon the pulmonary circulation of the blood and upon the activity of the right ventricle. *True*, *Wintrich* and *Küchenmeister* have shown that the vital capacity of the lungs is not diminished during pregnancy, and similarly, the cyrtometric researches of *Dohm* have proved that the thorax is not materially lessened on account of the pregnant uterus. Nevertheless, an objective observation of the mechanical conditions of respiration is bound to give rise to the opinion that respiration appears to be hindered by pregnancy, and that in spite of the normal size of the thorax and the normal capacity of the lungs, the extent of healthy organism is encroached upon, so that disturbances are more likely to arise from that quarter in pregnant women than in women who are not pregnant.

After labour the state of affairs suddenly undergoes a change, the resistance to the respiration becomes less, the aspiration of the blood stronger, and it is not at all impossible for disturbances in the respiration and congestion in the lungs to arise in consequence, which only become pronounced gradually, that is, in the first days of the puerperium.

Changes in the blood during pregnancy.—As regards the blood, it may be mentioned that plethora or hydræmia is still generally believed to occur during pregnancy, and that the condition is capable of influencing injuriously the action of the heart.

Secretion of the kidneys during pregnancy.—Not without importance are the conditions of the renal secretion. Pregnancy predisposes to a diminution of the action of the kidneys; this may be taken to be generally the case, although naturally it cannot be proved in every instance. Indeed, pregnancy predisposes to albuminuria, swellings and œdema. These

conditions frequently become manifest in diseases of the heart by the early appearance of œdemata, the most important sign of absence of compensation; they maintain and increase the dyspnœa which often appears even under normal circumstances, towards the end of pregnancy.

If we take a general view of the above-mentioned influences and disturbances which are as a rule associated with pregnancy, we find that as regards the activity of the heart, the circulation and formation of the blood, the respiration and finally, the secretion of the kidneys, conditions are created which may easily lead to disturbances of various kinds. These disturbances are not directly obvious; on the contrary, they remain within such limits that they are compatible with a feeling of perfect health, and experience shows that healthy women bear and conquer them easily.

Nevertheless we may say that the latitude of health is limited, and under extraordinary circumstances it easily happens that the border-line is exceeded, so that full compensation cannot be said to exist.

In pregnant women who are no longer quite healthy, morbid changes take place therefore very easily. With regard to women suffering from heart-disease we may presume—and experience confirms it—that only the mild and well-compensated cases remain unimpaired in consequence of pregnancy and child-bed, but that the possibility of trouble exists for all the severer cases. We have seen that the action of the heart is threatened in many ways, and it may easily happen that the border-line of its capability is exceeded in cases of cardiac disease; and to this we have to add the difficulty of breathing and that of the renal secretion. The more severe the heart disease, the sooner consequences will ensue which may prove for the woman dangerous and calamitous.

Although these dangers begin with the commencement of pregnancy they appear at first imperceptibly, and attain as a rule a considerable degree in the second half of the term. But there are not wanting cases, though they are rare, in which decided signs of absence of compensation make their appearance in women suffering from heart-disease in the very first months

of pregnancy. These disturbances may disappear and be compensated for; as a rule, however, they grow with inconsiderable fluctuations from day to day and bring the patients into a most distressing condition which makes the greatest demands upon their physical and moral ability to endure suffering. The dyspnœa and œdema vary, the increasing tumefaction renders the patients helpless, unable to do any work, and almost unable to move about. The appetite is disturbed, and attacks of dyspnœa, particularly during the night, make sleep impossible.

Labour.—Nevertheless, experience teaches that all these complaints which grow from day to day can usually be endured until the end of pregnancy. The termination of the distressing period is anxiously awaited both by doctor and patient, and the commencement of labour-pain is joyfully welcomed. The pains of labour are cheerfully gone through since they bring release from extreme anguish; but with the end of the labour-act, with the liberation from suffering, with the desired calm, there enters also a condition of weakness, a collapse, which harbours new dangers and which not infrequently leads to a development of œdema of the lungs. If this immediate danger is surmounted, there still remains a perilous state of cardiac debility, there is still a possibility that paralysis of the heart may supervene, and it is only by very careful nursing and slowly that this painful condition can be overcome. Often enough the heart continues weak for a long time, and compensation is disturbed for a lengthy period, sometimes unfortunately for good.

The state of these puerperal women shortly after labour has some resemblance to that after the crisis of acute diseases. We have already made this comparison when speaking of the slowness of the pulse in child-bed, and we consider it necessary to devote a few more words to this point. Pregnancy, a normal physiological process, occasions especially towards the end so many disturbances and such a limitation in the normal latitude of health, that it may almost be regarded as a morbid condition. Its signification is not far removed from that of an illness and it requires just as careful treatment as an acute disease.

This comparison with the condition after the crisis of acute diseases receives further justification from the fact that pregnancy is succeeded, during child-bed and later as well, by a number of complaints which are analogous to the sequelæ of acute pyrexial diseases. Among these we may mention in particular nervous diseases, such as encephalitis, myelitis and multiple neuritis; further, chorea and polyarthritic rheumatoid affections;—a certain analogy is also present in the disease of the kidneys. Such an analogy we might also find in the circumstance that at the height of pregnancy the predisposition to fresh infectious diseases is very slight, whilst during child-bed a predisposition to purulent infections, erysipelas and severe tuberculous processes is a distinguishing feature.

Almost all authors are agreed that pregnancy is calculated to produce fresh and untoward complications in patients who suffer from chronic heart-disease. Of course this indictment does not apply—or only exceptionally so—to the more benign and perfectly compensated cases of such affections of the heart. These are so much like the normal, healthy state that they can endure the pregnancy quite as well as women in a perfect condition of health and without any particular difficulty, and it is conceivable, as *Wessner* says, that many such cardiac diseases can pass unrecognised from the beginning of the pregnancy to the end of the puerperium because there are no symptoms pointing to disease of the heart. It is however totally different with the severe forms of chronic heart-disease which manifest already signs of disturbed compensation. These cases undergo an aggravation almost without an exception, and become finally more or less dangerous to life; in fact, a considerable number of these patients succumb directly as a result of pregnancy and child-bed. Although there had already existed a severe form of heart-disease it is by no means justifiable to assume that a similar aggravation or even death would have happened, had there been no pregnancy. Purely objective observations, as well as the study of the processes involved, show sufficiently clearly that the condition of women suffering from such diseases of the heart is considerably worse after pregnancy and child-bed.

Macdonald says: "In all the cases of heart-disease which

have been recorded in this work¹ it will be observed that if the lesion was at all severe, the labour was found to be invariably accompanied by extreme cardiac irregularity, with also a feeble irregular and intermittent pulse, much dyspnœa and cyanosis. In a certain proportion of cases unconsciousness was noticed, the patients having the appearance of persons under the influence of chloroform. In some cases the perturbation of the circulation was such as to end during the labour, in sudden death. More frequently however, we notice that the confinement was tided over and a temporary but very frequently delusive improvement succeeded it. Where death results in cardiac cases the post-mortem examination reveals almost invariably pulmonary congestion, especially of the bronchial mucous membrane, and pulmonary œdema. Often also we find apoplectic extravasation of blood into the lungs of recent or of older date, and occasionally pneumonia, and very frequently pleuritic effusions."

The experiences also of other authors confirm that death seldom happens during pregnancy; labour at term or premature labour is the general issue. The real danger begins at or after labour. Frequently death occurs during the labour act, and more frequently still after its completion. The most frequent causes of sudden death are œdema of the lungs, and paralysis of the heart. Later as well, even after many weeks or months, death may occur in consequence of a permanent aggravation in the compensatory disturbances through dropsy, embolism or infarcts.

Many observers believe that the complaints of heart-diseased women who become worse through pregnancy are relieved immediately after labour, and that the condition of the puerperal woman, if no fresh infarcts are formed, is consequently much improved. *Fellner* also shares this optimistic view of most gynæcologists, a view contrary to that held by internal-medicine-clinicians. This is the result of the difference in the material observed by the two classes of physicians, a difference about which we shall again have something to say. The feeling of relief is certainly striking, and the knowledge that an exacting

¹The bearings of chronic disease of the heart upon pregnancy, parturition and child-bed, by *Angus Macdonald*. London, 1878, p. 201.

task is done with, inspires the poor patient with renewed hope. But the condition is nevertheless still dangerous, and the longed-for quick improvement often never comes.

Interruption of pregnancy.— Immediately after the confinement there ensues, as already mentioned, a state of weakness, a more or less marked collapse, which can only slowly be overcome. The cause is plainly visible. The over-exertion of the heart during labour, the disordered compensation, continues undiminished after the labour is over, and, moreover, the psychical condition, the moral fatigue must also not be forgotten. Through the long continued period of suffering, growing worse day by day during the later part of the pregnancy, through the weary time of anxious waiting for the unknown end to come, the moral resistibility is exhausted, and the period of excitement is succeeded by one of tiresomeness which contributes to the general state of collapse.

Having now pointed out the dangers which confront women suffering from affections of the heart during pregnancy and child-bed, we must turn our attention next to the important practical question: what are the ways and means to be adopted in order to avert or diminish these dangers?

Macdonald has accurately described the duty of the medical man in such cases when he said: "It is certainly devoutly to be wished for that if possible—given that one of our patients is the victim of a special cardiac lesion—we should be able to predict what are the special additional risks, if any, to which the pregnant parturient and lying-in conditions expose her, and what are the prophylactic or therapeutic measures we are bound to adopt so as, if practicable, to avoid or diminish such risks." (P. 4. l. c.)

If a pregnant woman affected with heart-disease begins to manifest signs of absence of compensation the most careful and suitable treatment must be instituted to re-establish compensation and to maintain it so re-established. This task does not consist merely in telling the patients to drink plenty of milk and in prescribing for them digitalis, but it is not possible to enumerate here all the necessary details.

The question which concerns us most is whether the normal

end of the pregnancy should be awaited or whether and under what special circumstances artificial premature labour may or should be induced? The whole discussion turns round this question.

It is well to make the preliminary observation that in women with heart disease miscarriage occurs comparatively often; it almost appears as if this were nature's attempt to effect a cure.

Artificial premature labour.—The first to recommend the induction of artificial labour was *Da Costa* who in 1827 saw an immediate improvement after a spontaneous premature labour in the 8th month in a case where an aneurysm of the heart which had existed for some time underwent a considerable change for the worse during pregnancy. Later, *Hofmann* (*Neue Zeitschrift für Gyn.* XIV., p. 386) simply accepted this proposal of *Da Costa* despite its vagueness. As a matter of fact, the operation has several times been performed on account of "heart-affections." Most gynæcologists have given utterance to their opinions on the point, but the indication for artificial premature labour has been recognised in a very limited degree only.

Even *Macdonald* who shows a deep medical understanding of the enormous importance of the complication in question expresses himself thus: "Premature labour should seldom or never be recommended, because it is so much more likely to do greater harm by disturbing the action of the heart and the condition of the lungs than any good it might produce by terminating the evil effects of the pregnancy. It is always to be remembered that relief of symptoms is not certain after delivery or anything like certain. The only conditions which seem to warrant the induction of premature labour, are the presence of influences, which unduly distend the abdomen and thus keep the diaphragm in a state of continuous elevation." (P. 206, l.c.) *Macdonald* is therefore opposed to premature labour not on its account, but on account of the dangers which accompany it. He confines himself to recommending that women and girls suffering from heart disease should not be permitted to marry (an advice which is seldom accepted), that they should during pregnancy be treated and nursed most carefully, and that labour

should when it does arrive be expedited and facilitated as far as possible by the use of forceps and chloroform.

Spiegelberg thinks that artificial premature labour is permissible in cases of aortic defects, and justified, even necessary, in mitral lesions under certain circumstances. According to *Löhlein* the indication for premature labour is present in both kinds of heart-disease in the same manner: (*a*) if unfavourable conditions have developed entirely or partially in consequence of the pressure of the uterus or of the upward pushing of the diaphragm into the thoracic cavity; (*b*) if the death of the mother is shortly expected (in such a case, however, the premature labour is likely to come too late).

Schleyer says with regard to artificial premature labour, that it ought to be restricted to rare cases only. Sometimes it is necessary to have recourse to it, but seeing that the results have so far not been very satisfactory it is advisable to admit the indication as sparingly as possible. *Dohrn* thought that as a matter of principle we should adhere to an expectant attitude.

On the whole it may therefore be said that modern gynæcologists recognise the indication for artificial premature labour in complications of pregnancy with chronic heart disease, but only to a limited extent.

There are two reasons why opinion of the indication of artificial premature labour is so reserved: 1. the dangers which the operation presents for both mother and child; 2. the undervaluation of the dangers which pregnancy involves in women with chronic heart disease. In point of fact, we think that these dangers are underrated by most authors, and that one of the principal causes of this under-estimation is the dissertation by *Wessner*. This author attributes to the complication only a slight injurious influence. "The cause of the unfavourable influence of pregnancy on the affection of the heart does not lie so much in either the increased activity of the organ resulting from the pregnancy, or the sudden fluctuations in the blood-pressure occasioned by the labour act, or in the high position of the diaphragm, as in the psychical and physical over-exertions of the labour process which have a reacting influence upon the heart. But statistics show that by far the greatest number of cases withstand these

over-exertions without any particular injury. It rarely happens that a cardiac defect succumbs to pregnancy or labour as such; as a rule it is severe forms of heart disease which we then have before us, and secondly complications." *Wessner* concludes therefore that the prognosis (in complications of chronic heart disease with pregnancy) is for both mother and child considerably better than it is generally believed to be, and that the induction of premature labour does not appear to be justified. *Fellner* in his latest work expresses the same opinion.

As we have already mentioned, we cannot at all agree with these views and conclusions arrived at in virtue of the apparently favourable statistics of the gynæcological clinics. That these statistics appear favourable is to a great extent due to the different character of the material. Pregnant women with heart disease seek as a rule admission into gynæcological clinics shortly before their expected confinement, that is, at a time, when the natural termination of the pregnancy, even where there are fairly severe disturbances already present, is not likely to be long delayed. Under such circumstances it is only natural that if at all possible the induction of premature labour should be avoided, considering that notwithstanding recent improvements the operation is still a rather serious one. On the other hand women with heart disease who are pregnant come under the observation of the internal clinician on account of their disease, and the latter demands the earliest possible artificial delivery if the illness can no longer be combated by the usual therapeutic agencies. We must also return once more to the other point upon which *Wessner* relies in his assertions, namely that a large number of cardiac affections are overlooked in pregnant women because they do not make themselves apparent by any symptoms or disturbances. This fact is perfectly true, but it must not be taken into account with regard to our subject and with regard to the question of artificial premature labour, because it is only such cases of heart disease which come into consideration at all, that have already led to disturbances of compensation.

That heart disease, and especially valvular lesions, may exist without markedly affecting the whole organism is a fact

well enough known; it is just what happens in the mild cases with full compensation. Such patients experience no troubles, they feel perfectly well, can work, move about and live like people whose health is unimpaired. Analogous is the behaviour of pregnancy towards the cardiac defect. In mild, fully compensated cases pregnancy is endured quite as easily as by women who are in perfect health, and there is no reason to interfere with them. The normal course of pregnancy and parturition is as a rule not interrupted. But experience teaches that with repeated pregnancies injury supervenes in time and that a more or less severe and lasting defect of compensation arises in consequence.

Totally different is the behaviour of the severe cases of heart disease which no longer possess an undisturbed compensation. When such women become pregnant the signs of the absence of compensation increase in severity and assume in the latter months of the utero-gestation unendurable proportions. Here the pregnancy is undoubtedly injurious, in other words, the destruction of compensation increases, and the most careful treatment is frequently unable to re-establish it. It will now be the duty of the physician to form an opinion whether the patient will be able to withstand the burden and suffering till the natural commencement of the labour-pains, or whether the defect of compensation will grow to such a degree that death will most probably result.

If some authors say that the life of the mother must be in absolute danger we cannot take this to mean that this danger must be an immediate one (since the life-saving interference would then arrive too late) but that it must be anticipated with certainty or with the greatest probability. We cannot decide this literally but every experienced conscientious and observant practitioner must be able to come to a decisive conclusion. Statistics of internal clinicians show that of severe cases of chronic heart-disease nearly 40% die in consequence of pregnancy and parturition. This figure is big enough to warrant us in saying that in every pregnant woman suffering from heart-disease in whom defects of compensation exist and are on the increase, the indication of artificial premature labour is quite

justified. The life of the child which is, by the way, always in danger even where the pregnancy of women with heart disease follows a normal course is of no consequence in comparison with that of the mother; surely the latter or her husband has a perfect right to renounce the happiness of having children if by an artificial interruption of the pregnancy the life of the pregnant woman can be saved or prolonged.

We are of the opinion that in all cases of pregnancy complicated with heart-disease in which an absence of compensation occurs, that keeps increasing in spite of careful treatment and is likely to attain serious proportions, the interruption of the pregnancy is indicated and justified. If threatening symptoms appear already in the first half of the pregnancy, artificial abortion takes the place of artificial premature labour. The practitioner will doubtless prefer the former seeing that it is an easier operation and one which can be finished more quickly.

As regards now the dangers to which artificial premature labour exposes mother and child, we must admit that in accordance with the opinion of gynaecologists we have not in recent years made much progress in this respect. *Bossi's* method seemed at first to promise a great deal, but on careful examination it has been found that the old methods which have stood the test of time are after all preferable. (*v. Bardeleben*.)¹ And as far as the weariness is concerned which is associated with the long duration of an artificial premature labour, we are not disposed to attach very great importance to it, since parturient women who have suffered considerably are as a rule not very sensitive, and because they are quite prepared to endure a fresh ordeal in the hope that it will mean the end of their troubles. On the other hand we desire to point out that the gain of a few weeks in such a distressing condition as pregnant women with heart disease have to endure, is an enormous advantage, considering that the continuation and aggravation of the distress for several weeks longer exhausts the physical and moral strength of the patients to such an extent that after the confinement they break down completely in body and soul.

¹*v. Bardeleben*, Wesen u. Wert der schnellen mechan.-instrum. Mutter-mundserw. etc. Arch. f. Gyn. Vol. 40, No. 1.

It is not feasible to lay down special rules with regard to the different forms of valvular disease or to formulate different indications respecting marriage according to the seat of the lesion. Statistics show that most deaths occur during pregnancy complicated with mitral stenosis. But the reason is mainly because mitral affections are altogether the most frequent valvular lesions in the female sex. What must influence our opinion decisively is the question: Is there an incompetence of the muscle of the heart or not? Many women with well compensated valvular defects tide over repeated pregnancies without developing any disturbance in the compensation. We agree with *Fellner* in holding the prohibition of marriage in well-compensated cases of heart disease unjustified and harsh.

Prohibition of marriage.—Having in the above remarks discussed the attitude to be taken up by the physician in the presence of pregnancy complicated with heart disease, we must now devote a few words to those cases where we are compelled at an earlier stage to put in a word of advice. We refer to women suffering from cardiac affections whom it is our duty either to dissuade from marrying or if they are already married to warn against allowing themselves to become pregnant. It is only in the severest cases that the physician is called upon to oppose a marriage with all possible energy. Just because we can only advise we must always remember that as a rule our orders are not carried out if they involve as in this case sorrow and disappointment. It is therefore necessary that we should bear in mind that our warning words may, if not accepted, cause more mischief than good because to the real danger occasioned by the disease an aggravating element would be added by the fear and worry of the patients who have possibly been hitherto ignorant of their condition and of its serious character. Besides, considering that in the majority of cases we should be against the marriage of women affected with heart disease on account of the dangers which we anticipate from a possible pregnancy, we can avoid the infliction of anguish upon our patients by permitting the marriage and by instructing the husband to avoid conception for as long as possible.

Prohibition of pregnancy.—Finally we must remember that an absolute prohibition of pregnancy will only very rarely be listened to; women do not like the idea of renouncing maternity altogether. But when a child has been born and the family is not without an heir, the physician may expect that his advice to avoid further pregnancies will be adopted, especially if the mother has become aware that her condition has deteriorated in consequence of the first pregnancy. We know that a complete renunciation of all maternal happiness is to many a sore disappointment, and this is, particularly in women with heart disease, likely to be as severe or a severer trial than a single pregnancy which under advantageous circumstances may possibly take a favourable course.

It is our principal concern in every case to study the pros and cons most carefully and to remember that though we must not exhibit a want of energy we must at the same time endeavour not to deprive our patients of every joy of life.

3. *Diseases of the Myocardium.*

We will now consider the diseases of the muscles of the heart and their relationship to marriage.

Weakness of the heart after infectious diseases.—In the previous chapter we have mentioned that in the course of many infectious diseases the settlement of bacteria on the endocardium is the cause of the heart disease; and now we wish to point out that some infectious diseases injure the muscular wall of the heart itself through the action of the toxins. Diphtheria, influenza, more rarely typhus and other infectious diseases are capable of giving rise to curable but nevertheless prolonged weakness of the heart. The presence of minute myocarditic deposits demonstrated some time ago by one of us (*v. Leyden*) in such cases does not suffice for its explanation, and we are obliged to assume that it is caused by toxic action. This toxic myocarditis—for we must look upon the disease as one analogous to toxic neuritis—is as a rule demonstrable only during the attacks of weakness of the heart and is even then frequently confused with purely nervous con-

ditions. This weakness of the heart manifests itself either by acute conditions of cardiac collapse with syncope and a small slow pulse, or by stenocardiac attacks with a quick irregular pulse, while in the intervals between the attacks there are absolutely no changes demonstrable in the heart. If we are therefore entitled to admit the existence of such a toxic myocarditis, we must exercise our medical authority towards obtaining the postponement of any projected marriage until the last signs of the intoxication have disappeared. In the case of married persons, sexual intercourse must be restricted as far as practicable with a view to preventing the occurrence of pregnancies. Considering that the prognosis is on the whole favourable, and that it is therefore necessary to impose a temporary abstinence only, our advice will as a rule be followed.

Exophthalmic goitre.—As this disease also rests upon a chronic and toxic action on the heart we will devote to it a few words.

According to *Möbins*, "the victims of exophthalmic goitre suffer and die on account of their hearts. The question of comparative cure is decided by the state of the heart." The toxin of *Graves's* disease acts therefore mostly on the heart and the blood-vessels. Where the affection is well-marked the subject of marriage is hardly likely to arise as the symptoms cause such a disfigurement that the existence of the disease is plainly visible, and the condition of the patients is just as much a real obstacle against their marriage as is that of sufferers, f. i. from well-marked *skoliosis*, who do not on account of their deformity marry as easily as normal individuals. Although the cause of the disease is now after many years of useless theoretical wrangling rightly attributed to a dystrophy of the thyroid gland, we are still no wiser with regard to its special etiology. Comparatively often there appears during pregnancy a bronchocele which disappears at the end of the term of gestation; sometimes it remains stationary, and sometimes it returns with repeated pregnancies. Exophthalmic goitre does not commence during pregnancy any more frequently than it develops from a bronchocele without clinical manifestations.

Where there is pronounced tachycardia pregnancy is natu-

rally bound to weaken the organism further still. A curing influence such as was described by *Charcot* may possibly be explained after the analogy of other examples in pathology. A chronic condition becomes acute and returns to the normal after the acute stage has run its course. The observation of *Charcot* of a disappearance of *Graves's* disease has however, until now remained the only one known in literature. The complete disappearance at the end of pregnancy of bronchoceles which had existed previously has been observed more frequently. *Van t' Hoff* describes a case in which the pulse-rate diminished considerably in the lying-in period, but went up again shortly afterwards. There had been a premature labour of an unripe embryo. On the other hand *Jeoffroy* has seen a material aggravation of the clinical picture. In any case, the prohibition of pregnancy will have to be insisted on if a previous gestation was the cause of a visible aggravation of the condition.

Graves's disease attacks by far more women than men, and for this reason the complication with pregnancy is of the greatest interest to us. That trouble and sorrow during the married state are in such an illness as exophthalmic goitre which depends to a great extent upon psychical emotion, bound to exercise a very great influence is quite evident. The husband who suffers from this affection will naturally receive much injury from pecuniary and business worries. Sexual intercourse affects the patients, where cardiac symptoms are prominent, quite as much as if they were suffering from heart-disease proper. Considering that the malady is easily inherited marriage should be avoided if possible.

Nicotine and alcohol.—Of other toxic effects on the heart we have to consider those of nicotine and alcohol; both damage the muscles of the heart in different ways. The consequences of the action of nicotine manifest themselves mostly by a disturbance in the function of the heart-muscle which disappears gradually after the cessation of the abuse of tobacco. These cases are therefore of little import as regards our theme, seeing that we can as a rule help our patients by recommending them to give up smoking. It is different as regards alcohol. Here we have to decide whether or not the injury caused to

the heart by the abuse of alcohol has gone so far that it will not be removed by the discontinuance of the pernicious habit. With regard to the slight cases we may say the same as we said with regard to chronic nicotine intoxication; the complaints may cease as soon as the toxic action of the alcohol has disappeared. In this connection we may mention that a prudent marriage often acts as an inducement to restrict the deleterious indulgence in tobacco and alcohol, and that from this prophylactic point of view the married state is of considerable advantage to the health of these individuals.

Chronic myocarditis.—But where the over-indulgence in alcohol is continued, a genuine myocarditis develops with anatomical changes in the heart-muscle or in the kidneys which are incapable of restitution. Frequently there arises in association with this condition a chronic form of alcoholic nephritis, with a group of symptoms which resemble closely those of cirrhosis of the kidney. Following upon attacks of cardiac asthma which become more and more frequent and serious there appear finally symptoms of congestion which lead under dyspnoea and dropsy to a fatal issue through the complete incompetence of the myocardium. Should it happen that we have before us patients with such chronic myocarditis, an affection which is, by the way, observed as a rule in people of an advanced age only, it will be our duty to dissuade them from marriage, be they males or females. As to recommending the avoidance of pregnancies, we shall probably seldom be in the position of having to do so, since conception is likely under the circumstances to take place in very few women, seeing that in the majority of cases metritic changes exist which have been produced by the general congestion.

We shall return in the chapter on arterio-sclerosis to the special arterio-sclerotic affections of the myocardium.

Syphilis.—Syphilis does occasionally give rise to well-marked myocarditis, in addition to the injuries to the muscle of the heart occasioned in syphilitic affections through the endarteritis of the coronary arteries, which injuries are no different than those of ordinary arterio-sclerosis. At the beginning of the illness, antisyphilitic treatment may often prove successful,

or at least sufficiently so to arrest the progress of the disease. As to the very severe cases, the same rules apply which we laid down for chronic myocarditis generally.

Fatty degeneration of the heart.—Of especial importance to our subject are further the cases of "fatty heart." By this term we understand the disturbances in the activity of the heart, which frequently occur in obese people without any real disease of the myocardium, but in whom there arises in the further course of the affection, in consequence of the prolonged greater strain on the heart, hypertrophy and dilatation of the organ, so that the deposit of fat on the heart-muscle is only of secondary importance. To these patients particularly we are as a rule able to do good by instituting the proper treatment which consists above all of a careful dietetic system in combination with physical exercise, and this good we can achieve even in those cases where the subjective complaints are already relatively very considerable. Generally speaking, it will not be necessary in such cases to dissuade from marriage. On the contrary marriage may reasonably be expected in the case of many "luxurious livers" to be of decided benefit, seeing that it may possibly occasion an alteration in their mode of life and especially in their dietetic indiscretions.

Overexertion.—In the presence of disturbances in the activity of the heart-muscle which we observe sometimes *f. i.* after physical over-exertion, our attitude must depend upon whether we may expect a restoration of the function on the disappearance of the injurious influence, or not.

Incompetence of the heart-muscle.—In very severe cases of insufficiency of the myocardium it is immaterial for our decision on what basis they rest. Whether there exists a degeneration of the muscular wall of the heart which produces the cardiac debility, whether we have before us a heart which has become incompetent in a case of scoliosis, whether it is the heart of an alcoholic subject which begins to fail, or the heart of a nephritic patient which has come to the end of its working capacity, is of no consequence as far as our present purpose is concerned, because the arrangements to be made are in every instance alike; they vary according to the severity of

the case between prohibition of marriage, prohibition of sexual intercourse and induction of premature labour.

The neuroses of the heart we will consider in conjunction with true angina pectoris in the section on diseases of the arteries.

The sexual intercourse of married individuals affected with heart disease.—Although the subject of sexual intercourse during married life is treated in detail in another chapter of this work, we cannot quite avoid making a few remarks in that direction bearing upon our theme. That a considerable alteration takes place in the blood-vascular system as a result of the sexual act is well-known and also proved. (*Mendelsohn.*) In man it is particularly necessary in this respect to decide each case on its merits. In very many individuals marriage does not perhaps occasion any difference in the mode of their sexual life, but in others, who as bachelors were inclined to venereal excesses a well-regulated married state usually means a greatly improved state of affairs. On the other hand, married men have a constant opportunity for sexual intercourse and a great deal depends on the nature of the wife whether abstinence is practised more or less. Excess is injurious, and it is the duty of the medical man to warn against it those who are subject to heart disease, and to recommend moderation. The occupation of separate bedrooms is in such cases advisable. But it is also well to remember that the sexual requirement varies in different individuals according to their temperament and that exaggerated abstinence often does more harm than good. As the wife is on an average the more passive partner at the exercise of the sexual act, it will often be advisable, where she is the victim of heart disease, for the medical man to give to the husband the necessary instructions.

We must now briefly refer to the cases in which it is imperative to recommend to women suffering from heart disease the avoidance of pregnancies. As absolute continence from all sexual intercourse is indicated in the severest cases only, and as on the other hand there is no safe protection against the occurrence of conception in any other but absolute continence, conception must be prevented as far as possible. This is not the

place to enter into a detailed description of the various methods which are being adopted towards this object, but it is necessary to point out that the most prevalent custom by which conception is avoided, namely the coitus interruptus, is absolutely to be condemned. It has been proved that this form of intercourse is capable of causing even in healthy women cardiac complaints and even severe neuroses of the heart. (*Kisch.*) This is much more likely to happen in women suffering from heart disease. The cause of the injury lies in the circumstance that an unbearable amount of attention, while the excitement is at its highest point and the desire as yet ungratified, is bound to cause a very severe strain on the heart.

Lactation.—We come now to the question of lactation. Women with heart trouble must as a rule be prohibited from suckling, but there may be cases now and then where a woman with a well-compensated cardiac defect has undergone the ordeals of pregnancy—if we may say so—physiologically, and where lactation with its accompanying regular habits necessary in the interest of the child, will probably be of decided advantage. Additional help can also be expected from the well-known tendency of the genital organs to return to their normal condition more successfully in women who suckle their children. The physician will therefore have to use his discretion in every individual case. *Fellner* has shown that considerable fluctuations in the blood pressure take place during lactation, and we must consequently be very careful on the point. Now-a-days when so many mothers unfortunately omit to suckle their own infants for no other reason than their convenience, there is not much fear that the advice to abstain from lactation will not be strictly followed.

II. Diseases of the arteries.—*Arterio-sclerosis.*—Of the diseases of the arteries those which have any bearings on our subject are arterio-sclerosis and aneurysm.

Heredity plays in arterio-sclerosis a more important part than in the diseases of the heart described above.

Just as very few people would break off a contemplated marriage with an individual in whose family there have been frequent cases of arterio-sclerosis, so the physician has no right

to warn against the contraction of such marriages, as he would be justified in doing in cases of tuberculosis or insanity. For heredity is not the only powerful factor; it only creates the foundation for the disease which may possibly be averted by avoiding the well-known injurious influences which are demonstrably of the greatest importance in the etiology of arterio-sclerosis, such as f. i. alcoholism.

Every individual acquires in the end a more or less pronounced degree of arterio-sclerosis if he lives long enough, in other words, the atheromatous degeneration of the blood-vessel walls may be regarded almost as a physiological accompaniment of advanced age. We look upon arterio-sclerosis as a diseased condition only if it occurs in comparatively young people and if it occasions disturbances of health. It is naturally impossible to lay down fixed numerical age-limits. But as a rule marriages are concluded at an early age, that is, at a time when arterio-sclerosis is rare, between the ages of 20 and 30. The injurious influence of old-age marriages is well-known, and we are not far wrong if we attribute this injurious influence to a great extent to the sexual intercourse. Men of 50 and upwards who have often been previously sexually abstemious marry as a rule women considerably younger than themselves. The sexual connexion is carried out regularly and generally too often for a man getting on in years. The desire is out of proportion not to the sexual capacity of the individual in question, but to the amount which is good for him. Occasionally such marriages are entered into for the sole desire to have an heir, and this wish is then the cause of an exaggerated sexual intercourse.

This is why we often see elderly men who had up to their marriage been considered strong and healthy die soon after their entrance into such new and unaccustomed conditions.

Each sexual act causes an alteration in the blood-vascular system, a not inconsiderable increase in the blood pressure, and namely more in the man than in the woman. This increased blood-pressure which is easily withstood by the elastic vessels of young people is too much for the atheromatous arteries of the aged. To this is also added the unavoidable over-exertion of the respiration and of the heart's action. Sudden death during

the performance of coitus is by no means rare among old men. It is the duty of the physician under such circumstances to speak a word of warning—particularly so, considering that it is chiefly in the case of men who think that there is nothing the matter with them, and in whom the arterio-sclerosis gives rise to no clinical symptoms, that this necessity exists—and to recommend extreme sexual moderation. Where the prohibition of marriage is called-for, a great deal naturally depends on the extent of the disease and on its situation, just as the general prognosis of the malady also depends upon the seat of the lesion.

The more vital the organ whose blood-vessels have become sclerotic the more dangerous the illness. If we differentiate, like *Huchard*, arterio-sclerosis according to its situation, we find that patients who exhibit a cardiac¹ or cerebral picture seem in greater danger than those who present the type of renal manifestations. The latter, again, seem in greater danger than the patients who show only outward signs of arterio-sclerosis, but no clinical symptoms or only such that proceed from less vital organs. The most important in any case is the sclerosis of the coronary arteries or their manifestation, true angina pectoris. There are doubtless cases of true angina pectoris in which after one severe attack the symptoms diminish gradually in consequence of the proper treatment and a judicious mode of life, so that they appear at very long intervals or disappear even altogether. Under such circumstances marriage and its consequences are apparently well borne. But after an interval extending over some years a relapse occurs, or a slowly-growing chronic heart-disease develops, with asthmatic conditions which force the angina pectoris into the background. We have then a chronic myocarditis with dilatation and with the symptoms of cardiac asthma.

We can distinguish in angina pectoris several forms of its course: (1) Acute cases: Sudden death, rapid closure or considerable stenosis of the coronary arteries; (2) Sub-acute cases: gradual stenosis of the coronary arteries, fibrous degeneration, changes in the heart, especially at the apex; (3) chronic cases, fibrous myocarditis; (4) mild cases of angina pectoris. In the

¹*Cf. Braun, Therapie d. Herzk.*

first 3 forms the physician is entitled and even obliged to prohibit marriage unhesitatingly. But the symptoms are generally so severe, the attacks so portentous of evil, and the intervals between them so distinctly productive of a feeling of illness that the patients are hardly likely to think of marriage. It is different in the mild cases. There we have chiefly difficulties of differential diagnosis to contend against, for similar symptoms occur in other cardiac affections as well, and there undoubtedly exists an angina pectoris neurasthenica vasomotoria. Where the angina pectoris is a symptom of such another disease of the heart, the rules laid down above are to be applied. In mild cases of true angina pectoris the physician will advise against marriage; married individuals will have to be recommended moderation, especially in sexual intercourse. Where the doctor thinks that there are indications of sclerosis in the cerebral arteries he must adopt the same attitude as in cases of severe angina pectoris. The arterio-sclerotic cirrhosis of the kidney dictates the same precautionary conduct as that indicated in granular atrophy generally which will be discussed in another part.

Especial care is necessary in cases of paroxysmal tachycardia. The main thing in this complaint is probably a correct diagnosis, since a confusion with true angina pectoris is sometimes possible, and occasional attacks of quickened pulse frequently occur in various cardiac affections. If we understand by paroxysmal tachycardia only those cases in which there is no organic disease, and which are consequently purely neurotic, there is no reason to oppose marriage as a matter of principle. Where the attacks happen in people already married, the doctor must investigate whether they are not perhaps associated with sexual over-indulgence and give his instructions accordingly. Pregnancy need not be prohibited in principle, but if the attacks should during utero-gestation become alarming or unmanageable, it might become imperative to induce premature labour.

If we follow *Rosenbach*¹ in distinguishing two forms of bradycardia, namely: (1) the functional form which appears

¹*Rosenbach*, Die Krankheiten d. Herzens u. ihre Behandlung.

as a consequence of the irritation of the inhibitory system of the heart and which is in so far always benign in its course seeing that it can take place only where the irritability of the myocardium is normal, and (2) the form which is produced by a change in the irritability of the heart-muscle or of the heart-centres themselves and which is as a rule irreparable, or at least prognostically very unfavourable,—if we admit the existence of these two forms, then the indications arising in regard to marriage are quite clear. In the first form we must apply the conclusions which we adopt in nervous paroxysmal tachycardia, the second form is always a sign of myocardic incompetence, and it necessitates therefore the precautions which are dictated by cardiac insufficiency in general.

Where attacks of tachycardia or bradycardia appear therefore as symptoms of organic heart-disease or of pronounced arterio-sclerosis they are signs of bad omen; if one attack is surmounted it is advisable, if pregnancy exists, to interrupt the same before further disturbances of compensation arise which would render medical help tardy and nugatory.

The more active part in sexual intercourse is played by the husband, and for this reason he is in greater danger than the wife. On the other hand, pregnancy causes in the latter an alteration in her normal condition which is to begin with the limit of what may be regarded as physiological.

In the etiology of arterio-sclerosis the increase in the blood-pressure is given as one of the principal causes, without regard to the circumstances upon which this blood-pressure depends; on the other hand it is proved that women are comparatively far more rarely attacked by arterio-sclerosis than men, and that women who have undergone pregnancy extremely often do not in spite of the increase in the blood-pressure at every pregnancy suffer from the disease more often than those who have never borne children. Nevertheless this physiological increase in the blood-pressure during pregnancy is bound to have injurious if not dangerous results where it affects a woman whose blood-vessels are already diseased. But conception seldom happens in women with well-marked arterio-sclerosis; such women have generally reached the menopause.

An existing arterio-sclerosis may during pregnancy become aggravated. Apart from the increased demands which gestation makes upon the circulatory apparatus, it is the minor ailments which healthy women withstand easily, that play an important part in the case of those affected with arterio-sclerosis. It is sufficient to mention the frequent tendency to nausea and vomiting as an example of the best-known of these ailments.

If the pregnancy itself is tided over without any material aggravation of the complaint, danger may be caused by the parturition. Every excessive physical exertion is capable of producing the rupture of a sclerotic artery in a vital organ as illustrated by the above-mentioned case of *Simpson*. Whether the abdominal pressure is applied during defæcation or whether it undergoes a great strain during the expulsion stage of labour is immaterial as far as the result is concerned. The duty of the medical attendant in such cases is therefore to relieve the parturient woman of the exertion of the labour, that is, to complete the latter artificially and under an anæsthetic, which is under the circumstances the lesser of two evils.

Aneurysm.—With regard to aneurysm there is on the whole nothing more to be said than was said with regard to severe arterio-sclerosis, namely that it is the duty of the physician to warn against marriage, to recommend the utmost moderation in the exercise of sexual intercourse and to prohibit pregnancy as far as possible.

III. Diseases of the veins.—The acute affection of the veins, that is to say, phlebitis, does not concern us in our present theme. As regards phlebo-sclerosis the same rules are applicable as were laid down with respect to arterio-sclerosis.

Schrötter is right in pointing out that phlebo-sclerosis presents no clinical symptoms, for it is merely one of the manifestations of general angio-sclerosis or because it is observed in connection with diseases of the heart. As a rule sclerosis of the veins is only recognised post mortem by a microscopical examination. The tumours of veins, their tuberculous and syphilitic affections need not be discussed in this place, for not the seat of the lesion is the main and decisive thing in these diseases,

but its etiology, particularly as isolated disease of the veins hardly ever occurs in these cases.

The most frequent and most important disease of the veins is their dilatation. *Schrötter* restricts the name "varix" to the sacculated distentions, and calls the uniform dilatations, the so-called varicose veins, phlebectasis. Among the latter the enlargements of the veins of the lower extremities occur most frequently. Owing to their position while the body is in the erect posture congestion takes place in them more easily than elsewhere. Pregnancy plays a very great part in the etiology of varicose veins. Consequently the condition is noticed much more frequently in women than in men. Where a dilatation of the veins exists already it undergoes aggravation as a result of pregnancy. But the physician will hardly ever find himself in the necessity of having to prohibit a marriage on this account. In the case of the lighter forms of ectasis bandages are generally sufficient, and extreme dilatations are as a rule present in older women. The danger lies in the possible occurrence of fatal hæmorrhage, in inflammation and ulceration, but above everything in thrombosis during the puerperal state. The complaints in these severe cases are however so great that surgical treatment *i. e.*, excision of the veins, appears desirable if not necessary, especially as the results are not unsatisfactory. In any case, it is the duty of the medical attendant to watch most carefully the puerperium of such women. The recommendation of *Lennander*¹ that the foot-end of the bed should be by about 10 to 50 cm. higher is worth adopting. The period of child-bed should extend over at least 14 days; this applies particularly to the women of the working-classes who are in the habit of getting up as a rule during the first week in order to follow their occupations. The doctor will often have to point out the long duration of an eventual illness if he cannot otherwise persuade the patient to prolong her lying-in period as much as possible.

Next in frequency is the formation of varicose veins in the hæmorrhoidal plexus. Here also pregnancy acts injuriously; but as a rule the varicosities abate at its termination to the same

¹Quoted after *Schrötter*.

extent as they increased in the course of it. Extreme cases belong to the domain of the surgeon, of course as long as there is no pregnancy existing.

In man there is finally to be considered the varicocele, or the formation of varicose veins in the plexus pampiniformis. That it is capable of producing impotence is denied by *Moritz*. At any rate, it can, if at all extensive, interfere with the sexual act and operation is therefore in such cases to be recommended.

What has been said here applies to the cases of essential varix. (*Mahillon*.) If the phlebectasis is only a symptom of other organic diseases, if it is the result of cardiac or pulmonary affections, or of those of the liver or the kidneys, our standpoint must vary accordingly.

IV. Lymphatic system.—In conclusion, a few words on the diseases of the lymphatic glands and lymphatic vessels.

The acute infectious diseases do not come within our present survey. They must be treated in accordance with the principles generally adopted. We will however mention the so-called phlegmasia alba dolens which occurs comparatively often during child-bed. The opinions of authors on this affection vary. *Freund* sees the primary cause in a congestion of lymph (lymphatic stasis) which leads finally to a pressure-thrombosis of the crural veins, whilst others, f. i. *Fehling* regard the venous thrombosis as the cause of the disease.

Just as acute infectious diseases spread preferably over the lymphatic system, so chronic infectious diseases, f. i. tuberculosis and syphilis attack the lymphatic vessels and glands; it is not here however the attacked organ which is the main consideration, but the nature of the disease.

Detailed information on these two diseases, as well as on scrofula, will be found in other portions of this work.

Of the chronic diseases of the lymphatic vessels, we have to consider in connection with our subject their dilatation only. More so than in the veins, various degrees of dilatation occur in the lymphatic vessels. We meet slight and harmless cases of lymphectasis up to enormous lymph-varices, insignificant local lymphangiomata up to pronounced elephantiasis lymph-angiec-

todes. Considering the rarity of the disease it is not possible to lay down general rules.

A transition to the diseases of the blood is formed by the progressive hyperplasia of the lymphatic glands, of which we distinguish two types, both of which have a malignant progressive character as a common feature. One type is represented by a leukæmic adenia, *i. e.*, malignant lymphoma with changes in the blood such as are characteristic of leukæmia, and the second type by *Hodgkin's* disease or lymphatic pseudo-leukæmia, *i. e.*, a progressive hyperplasia of the lymphatic glands of a malignant nature which leads to a fatal issue through cachexia and advancing anæmia, there being no leukæmic changes in the blood in the latter form. As regards seriousness, they both occupy a place midway between the malignant tumours and the pernicious diseases of the blood.

From our point of view we have to consider a possible complication of these diseases with pregnancy. We have no right to take up an absolutely pessimistic attitude, that is, to allow the pregnancy to take its course on account of the probable hopelessness of the illness; we know that pregnancy as such predisposes to progressive pernicious diseases of the blood, and an immediate interruption of the gestation appears therefore to be indicated if the loss of strength has not gone too far.

The primary sarcomata of the lymphatic glands belong, if it is not too late, to the sphere of the surgeon.

The secondary tumours of the lymphatic glands offer such an unfavourable prognosis that the physician will probably abstain from all interference.

XI .

Diseases of the Respiratory Organs in Relation to Marriage

XI

DISEASES OF THE RESPIRATORY ORGANS IN RELATION TO MARRIAGE

By **S. Kaminer, M.D.** (Berlin)

It has already been pointed out in the Introduction to this work by *Senator* that it is hardly ever acute diseases but principally if not exclusively chronic conditions which come into question with regard to the contraction of marriage and the happiness of married life. This limitation applies particularly to the acute diseases of the respiratory organs, with respect to which nothing special can be said from the point of view of their relationship to intended or accomplished marriages.

I. Pulmonary and laryngeal tuberculosis.—Among the chronic diseases of the respiratory organs tuberculosis of the lungs and larynx occupies a very prominent position in this respect because it is not only the disease of the individual as such with which we are concerned. It is also as a CAUSE of disease "that tuberculosis has great pathological importance," inasmuch as it is owing to its infectiousness a source of danger to the person living in the connubial state with the sufferer, as well as to their offspring who frequently inherit it.

It is necessary to point out at once that pulmonary phthisis and pulmonary tuberculosis are two separate conceptions though they are erroneously often taken as being identical. *Virchow* has always insisted that there should be a strict distinction between them, though not in the sense of *Niemeyer* and his school who regarded phthisis as a physical dyscrasy and forerunner of pulmonary tuberculosis. But the pathological-anatomical picture and the clinical course of the disease have recently been forced too much into the background by the

tubercle bacillus, the causative agent present in the tissues in every stage, not only with regard to nomenclature but also for purposes of prognosis. To-day it is only to that symbiosis of the tubercle bacillus with other pathogenic bacteria, which is of such decisive importance to the course and issue of the disease, that the name of consumption or phthisis is given.

The distinctiveness of the two notions Tuberculosis and Phthisis is in so far of importance with regard to the question of the contraction of marriage that whereas consumptives, being incurable invalids, ought never to be allowed to marry, this permission cannot be withheld from tuberculous persons in every instance as a matter of course. For the opinion as to the marriageableness of tuberculous individuals must depend entirely upon the prognosis of the disease in general. Those who regard every tuberculous affection of the lungs as absolutely incurable will of course be opposed to it, and the extreme result of this view is to be seen in the law of the State of Indiana which prohibits the marriage of all tuberculous persons. But those who believe in the curability of tuberculosis and are satisfied that the same causative agent may give rise to one and the same disease but one which is variable in length, course and issue will not in every case be able to give the same brief answer to the question whether and when tuberculous individuals may marry.

The success of modern therapeutics has resulted in an almost general rejection of the view that tuberculosis is an incurable disease. This success is not due to any specific remedy such as creosote, cinnamic acid or tuberculin for each of which great merit is still claimed, but is mostly a consequence of the circumstance that owing to the more delicate diagnostic aids at our disposal we are in a position to recognise the disease at such early stages that its course can as a rule be influenced most beneficially by climatic treatment or physical dietetic measures. Unfortunately however this favourable result cannot in spite of early diagnosis be looked for in every case and though we know it is possible for a tuberculous lung to heal up, it is just as difficult as it was formerly to foretell at all the course of commencing cases.

The investigations recently resumed by *Naegeli*¹ on tuberculous changes in the human cadaver have led to such interesting results that, as *Adolph Schmidt*² expresses himself, a new factor has been thrown into the discussion on tuberculosis. *Naegeli* has proved by the large post-mortem material of the pathological institute of Zurich that tuberculosis is rare but mostly fatal in the first years of childhood and more frequent but not necessarily fatal in somewhat older children. Of the bodies of persons between 14 and 18 years old dissected by him one half had already been attacked by tuberculosis and in all these cases the process had been active and progressive not a single one showing signs of healing. Between the 18th and 30th year almost every dissected body showed tuberculous changes; of these 75% were active and 25% healed up. From the 30th year onward the probability that active and fatal tuberculosis will be found diminishes while the certainty to find tuberculous lesions at all remains absolute; as age advances the number of active and fatal cases of tuberculosis diminishes while the number of benign recoveries increases.

These striking conclusions of *Naegeli*, though their objective justification may require examining into and though they may apply to the proletariat only, must needs have some influence upon the estimate of tuberculosis as an impediment to marriage. They show that it is for purposes of diagnosis of the utmost importance to establish in every given case whether we have before us a fresh and active process or one that has run its course. As long as the microscopic evidence of the presence of tubercle bacilli in the sputum was looked upon as the only decisive criterion of an existing pulmonary tuberculosis the disappearance of these bacilli was necessarily overestimated as a sign of recovery though *v. Leyden*³ had already in 1884 warned us against such a fallacy. But to-day we know with certainty that the tubercle bacilli may disappear from the sputum and again make their appearance without there being in these occurrences any positive evidence to justify us in arriving at a

¹*Virchow's Archiv.* Vol. 160.

²*Deutsche Med. Wochenschrift*, 1903. No. 40.

³*Zeitschr. für klin. Medizin.* Vol. 8.

definite prognosis. The presence of tubercle bacilli in the sputum is consequently no more the only decisive sign in prognosis than it is in diagnosis though it is in both a very valuable aid. This difficulty in making both a diagnosis and a prognosis has not been entirely removed even by *Koch's* second important discovery namely that of Tuberculin. *Koch* had hoped that by the use of this preparation we should be able to diagnose doubtful cases of "phthisis" in which a definite opinion cannot be formed as to the nature of the disease by a microscopic examination of the sputum for bacilli and elastic fibres or by the aid of physical signs. Experiments on animals have in most cases confirmed *Koch's* opinion, but this does not justify us in drawing the same conclusions with regard to man. The variability of the organism in the latter is so enormous that pathological knowledge obtained by experiments on animals must often fail when applied to human beings.¹ Moreover the statistics of *Beck*² quoted chiefly in support of *Koch's* view are capable of being interpreted in a sense diametrically opposed to it. Three cases of leprosy reacted to tuberculin with distinct general symptoms; of 16 cardiac cases 10 reacted; of 31 cases of muscular rheumatism 23 reacted; of 17 cases of acute nephritis 4 reacted; of 106 cases of gonorrhœa 59 reacted; of 145 cases of syphilis 59 reacted, etc. *Beck* concludes from these figures that tuberculin is the keenest diagnostic instrument for the recognition of tuberculosis. He says: "We are justified when a person reacts to tuberculin in inferring the presence of a tuberculous focus, whether it be one, if ever so minute, in a bronchial gland, or a small tubercle in the lung or any other organ which cannot be detected by a physical examination." But he does not give any pathological-anatomical proofs in favour of this conclusion which is so important in its consequences. He takes for granted what in reality requires first to be proved, and so this very work of *Beck* lends confirmation to the opinion probably expressed first by *Rosenbach*³ that non-tuberculous individuals

¹*Martins*, Pathogenese inner. Krankh.

²*Deut. Med. Woch.* 1899, No. 9.

³*Arzt contra Bakteriologie*. Berlin-Vienna. Urban & Schwarzenberg. 1902.

also react to tuberculin.¹ This sceptical attitude is possibly strengthened by the fact, proved beyond doubt, that not even all individuals, in whom tuberculosis is known with certainty to exist, react to tuberculin. Another conclusion of *Koch's*, that it would be possible by the reaction to tuberculin to demonstrate in apparently recovered cases of tuberculosis of the lungs or of the joints whether the healing process is fully accomplished or whether there are any isolated foci left behind from which the disease might at any subsequent time spread again like a fire from cinders glimmering among the ashes—this conclusion is so far also not yet shown to be correct though it could easily have been proved by the joint researches of a Zurich clinician along with the Zurich pathologist *Naegeli*.

The tubercle bacillus being therefore no longer, and rightly so, the prime and ultimate argument in diagnosis, and since the tuberculin reaction is also unreliable in settling the question of complete recovery, the physical examination of the lungs has again assumed that importance which seemed at one time to be denied to it. For though the causative agent may be the same in all cases we must not lose sight of the variability of the pathological changes to which it may give rise and the different ways in which the disease runs its course. These different physically demonstrable pathological changes though they are only stages along the route which the disease is travelling follow one another in most regular succession. It is consequently necessary in spite of the importance attached to bacteriological and physical examination in diagnosis as well as in prognosis to take into consideration the clinical picture, the subjective symptoms and the state of the constitution. The correct summation of all these factors is of the greatest consequence when considering the question of marriage in connection with tuberculous individuals.

The not very numerous authors who have dealt scientifically

Translator's note: Is not the reaction of non-tuberculous (?) individuals to tuberculin, taken in conjunction with *Naegeli's* statistics, rather a confirmation of the opinion that we are *all* more or less tuberculous? I have often heard *Gerhardt* say: "So ein bisschen tuberculös sind wir alle!" (Just a bit tuberculous we all are!)

with the question of the marriageableness of tuberculous persons have naturally come to different conclusions corresponding to their views of the disease. *Hartsen*¹ has recommended marriage and pregnancy as invaluable natural remedies in influencing phthisical processes—phthisical in the sense of the oldest nomenclature; *Virchow*² on the other hand, based upon his sad experiences, has strongly protested against any such marriages. He had frequently noticed in abstemious tuberculous persons after their marriage a development of acute processes among other organs in the prostate and he had particularly often had occasion in the post-mortem room to satisfy himself of the severe aggravation of the disease caused by the puerperal state.

According to *Virchow* there is nothing more common than for young people to fall a prey to galloping tuberculosis during the first years of their married life and his advice to medical practitioners is therefore that when consulted by such patients they should unhesitatingly and without any sentimentality explain to them the position and the danger they are incurring by marriage and let them decide for themselves. Of the same opinion is *van Ysendyk*,³ and *Kirchner*⁴ demands that everyone who has the power should prevent tuberculous individuals from marrying. *Gerhardt*⁵ also was in principle opposed to the marriage of tuberculous persons though he was not in favour of enforcing the restriction by Draconian laws. He did not forget the psychological influence which this prohibition might exercise upon them, but without under-estimating it he considered the psychical disappointment of far less importance than the dangers of tuberculosis. The only concession he would grant was to request a year's delay before deciding definitely and this only in such cases where the circumstances made it impossible to prohibit the marriage altogether.

¹*Virchow's Archiv*. Vol. 49.

²*Ibid*.

³*van Ysendyk*, Bulletin de l'académie de médecine de Belgique 1898.

⁴*Kirchner*, Bericht über den internationalen Kongress zur Bekämpfung der Tuberkulose 1899.

⁵*Gerhardt*, Zeitschrift für Tuberkulose und Heilstättenwesen 1891.

*Von Leyden*¹ and *Fürbringer*² are not so pessimistic with regard to the influence of marriage upon the course of the disease and not so strict in giving their consent. Both have seen good results from marriage and frequently as it happened in the very cases which they expected would take an unfavourable turn. Though they acknowledge the dangers of marriage they lay great stress on the variability of the course of tuberculosis and try to make it clear to the medical profession that it is their duty just as often to forbid marriage as to permit it. For marriage is from the hygienic point of view the most desirable union of the sexes, but it and its consequences demand such increased activity on the part of the organism of both husband and wife that it is not always possible for a person afflicted with tuberculosis to satisfy these demands for any length of time.

Influence of marriage on the tuberculosis of the husband.—The demand of some hygienists that a man should never indulge in sexual intercourse before marriage, a demand as to the physiological justification of which opinions are very much divided, will probably remain for ever a pious wish. The fact remains that the exercise of sexual connection before marriage on the part of the man is not by any means a rare occurrence and society is not prepared to condemn the practice. It must therefore be admitted that it is an exception for a man to remain chaste until his marriage. The sexual act as such is generally no novelty to the newly married husband and the physiological and pathological consequences of the same to a tuberculous individual hardly ever become a subject for consideration. Nevertheless it must not be overlooked that non-connubial and connubial intercourse have very different effects upon the organism. Non-connubial intercourse does not fatigue so much by its frequency, for it is only in very rare cases that consumptives cohabit with women, as by the circumstances accompanying it such as sleepless nights spent in public places of amusement, increased sexual excitement as a conse-

¹*v. Leyden*, Diskussion zu *Gerhardt* Zeitschr. für Tuberkulose u. Heilstättenwesen, 1891.

²*Fürbringer*, Diskussion zu *Gerhardt*, Zeitschr. für Tuberkulose u. Heilstättenwesen, 1891.

quence of different stimulants and over-indulgence in alcohol. *Jacob* and *Pannwitz*¹ quote as concrete instances cases where tuberculous individuals having had sexual intercourse with prostitutes leave the house immediately afterwards either to return to their work or to go home in a cold winter-night thus exposing themselves to the inclemency of the weather. If we also bear in mind that tuberculosis is very frequently accompanied by an almost characteristic morbid increase of the sexual desire we shall not easily underrate the ill-effects of non-connubial intercourse on the health of tuberculous individuals. *Darembert*² and *Wolff*³ think that we are for these reasons justified in advising "cured" tuberculous patients to marry. And indeed they are quite right. Because from the standpoint of sexual hygiene marriage is to be regarded as a blessing to the individual: the sexual life assumes an even course; regularity takes the place of promiscuousness; sleep is not curtailed—conditions are created by married life for the exercise of sexual intercourse which are hygienically of the highest value to the tuberculous husband.

The question presents however from the sociological point of view many serious disadvantages particularly as regards the proletariat. The struggle for existence is by marriage rendered more severe. Though *Jacob* and *Pannwitz* maintain that a careful working-man's wife can for half the amount of money required by an unmarried man for his keep, provide nourishment more suitable for an invalid than he may obtain at the public places which he frequents, it must be admitted that this calculation does not apply in all cases. We must bear in mind that the income of the working-man does not increase by his marriage but that on the contrary fresh and considerable burdens are added to his previous expenses chiefly by the procreation of families which are notoriously among the working classes as a rule rather numerous.

It is a well-known fact that tuberculous working-men generally bring into the world a number of children which is out

¹*Jacob und Pannwitz, Entstehung u. Bekämpfung der Lungentuberkulose. Leipzig 1902.*

²*Darembert, Notes sur le mariage des tuberculeux. 1890.*

³*Felix Wolff, Behandlung der Lungenschwindsucht. Wiesbaden 1894.*

of proportion to their income. *Reibmayr*¹ in his remarkable book has attempted to explain this phenomenon by the tendency of nature to compensate for the shortcomings of procreation as regards quality by a corresponding increase in quantity so that where the progeny is likely to be in danger through inheriting some disease its number may be relatively greater. However that may be, we have the fact to reckon with as is also proved clearly by the statistics of *Riffel*.² With the increase in the size of the household grows also the quantity of the necessities required and consequently the labour of the bread-winner, a labour which his weakened organism cannot perform at all or only with great difficulty. Want and poverty soon make their appearance, and nutrition, the most important factor in the treatment of tuberculous processes, suffers both in quantity and quality. Through the numerical increase of the family the housing conditions also undergo a change for the worse, and thus circumstances are created as a consequence of marriage by the unfavourable social state of the proletariat which are inimical to the recovery of tuberculous processes.

It is for these reasons that the marriage of a tuberculous proletarian implies from a social point of view the deterioration rather than an improvement of his economic position.

The struggle for existence claims also among the upper classes a proportionate number of victims though compared to the proletariat they form the exception rather than the rule. It is considerations of a social nature that play here a more important part. Marriage may for instance be highly dangerous to the tuberculous husband whom a passionate and vivacious wife is constantly dragging to parties and balls, to concerts or the theatre. What is to her a pleasure is to him a burden and therefore an enervation of his organism, a diminution of his resistibility.

Where there is no indigence or want of proper housing accommodation in the case of the proletarian, where the well-to-do are able and willing to renounce the pleasures and obliga-

¹*Reibmayr*, Die Ehe Tuberkulöser u. ihre Folgen. Leipzig 1894.

²*Riffel*, Mitteilungen über die Erbllichkeit und Infektiosität der Schwind-sucht. Braunschweig 1892.

tions compatible perhaps with their social position but not with their bodily constitution, marriage may be regarded as of the highest hygienic value to the tuberculous husband and as a very important remedy in its effects upon the diseased condition as such; otherwise it is only too frequently the cause of rapid aggravations.

Influence of marriage on the tuberculosis of the wife.—As a consequence of the modern organisation of society, the part which woman takes in the struggle for existence is becoming greater from day to day. The results of this struggle are more disagreeably apparent in the case of married women since the organism of the latter is already sufficiently taxed by the physiological processes of pregnancy and child-birth. *Von Leyden* particularly asks us to remember that though pregnancy is a physiological condition it is one closely bordering on the pathologic. For this reason conception in the case of an ailing woman is always to be regarded as a more or less serious complication.

And yet as late as in the middle of the last century the views on the influence of pregnancy upon the tuberculous process were diametrically opposed to those of the present day. The prevalent opinion was that this influence is a particularly favourable one. The history of this opinion is like that of many others in medical science; nobody knew how it originated, proofs of its correctness were unobtainable but as it had been circulated especially in France by the bearers of such weighty names as *Bordeau*, *Collen*, *Baumès*, *Portal*, *J. Frank*, etc. it became the common property of the medical profession and exercised great influence upon its decisions. Marriage—"ce remède banal de familles"—was recognised by scientific medicine as a cure of the tuberculosis of young girls. It is interesting to note that *Andral*,¹ the first physician who made a different observation described it as a rare occurrence deviating from the general rule. Subsequently *Grisolle*,² *Dubreuil*³ and others have by numerous observations endeavoured to destroy the legend of

¹Quoted by *Leudet*.

²*Grisolle*, De l'influence que la grossesse et la phthisie exercent l'une sur l'autre. *Arch. général*. 1850. Tome 22.

³*Dubreuil*, *Bulletin de l'académie de médecine de Paris*. Tome XVII.

the favourable influence of pregnancy upon tuberculosis. Quite recently the study of this important question has again been undertaken with great earnestness. *Weber, Gerhardt, v. Leyden, van Ysendyk*, and others have often had occasion to record sad experiences. The writer¹ also has in a report of 50 cases of the third medical clinic (*Senator*) and of the Berlin Royal University polyclinic for diseases of the lungs (*N. Wolff*) established in 33 cases an aggravation of the tuberculosis through pregnancy and only 8 cases in which pregnancy did not exercise any influence upon the course of the disease.

The important part which pregnancy plays in the causation and aggravation of pulmonary tuberculosis is also clearly shown by the collective investigation of *Jacob* and *Pannwitz* made by them at German sanatoria for consumptives. *Kuttner*,² *Loehnberg*,³ *A. Fränkel*,⁴ *Hamburger*,⁵ *Czempin*,⁶ *Strassmann*,⁷ etc. have published interesting observations, the two first-named authors especially with regard to the deleterious influence of pregnancy on tuberculosis of the larynx. All these observations and many others establish with certainty the correctness of the assertion that in a very large number of cases pregnancy has an unfavourable influence upon the course of tuberculosis and that it is also very often the cause of its origin or of the recrudescence of old deposits. The high percentage of aggravations (in the writer's statistics 66%) is explained by the nature of the complication; morning sickness and loss of appetite which cause great discomfort to even healthy pregnant women must naturally have a severer effect upon tuberculous individuals, because nutrition which is so important an item to them is bound to suffer through these gastric troubles, troubles that are difficult to remove even under ordinary circumstances. Vomiting generally accompanies these symptoms and its effect is not only an impairment of nutrition but it frequently pro-

¹*Kaminer*, Dt. Med. Wochenschr. 1901. Nr. 30.

²*Kuttner*, Arch. f. Laryng. Bd. 12.

³*Löhnberg*, Münch. Med. Wochenschr. 1903.

⁴*A. Fränkel*, Vehr. d. Vereins f. innere Medizin 1901.

⁵*Hamburger*, Berl. klin. Wochenschr. 1902.

⁶*Czempin*, Vehr. d. Berl. Med. Gesellschaft 1902.

⁷*Strassmann*, Verh. d. Vereins f. innere Med. 1902.

duces hæmoptysis on account of the convulsive and suffocative movements with which it is associated. Moreover, by the forcing upwards of the diaphragm, by the diminution in lung volume (retraction), by the deficient respiratory capacity and by the development of the placenta, conditions are created which have a disturbing effect upon the circulation in the lungs and the activity of the right side of the heart. This is the more important as even at the present day it is not possible entirely to deny that there are certain relations between the circulation of the blood in the lungs and tuberculous processes to which they may be subject. In the cases observed by the writer it appeared that the subjective and possibly also the objective symptoms were more marked in the first months of pregnancy than in the last, which is not improbable in view of the normal course of pregnancy in a healthy woman. The patient accommodates herself so to speak gradually to her altered condition; she loses if she is in the first or even second stage of her illness many of her most distressing symptoms and both percussion and auscultation of the lungs do not reveal any progress of the disease. The condition seems to become a latent one, the patients do not appear to suffer very severely—until labour occurs.

Though the reseaches of *Wintrich*, *Kuechenmeister* and *Dohrn*¹ have proved to satisfaction that the vital capacity of the lungs is not diminished during pregnancy and that the thorax is not made smaller by the pregnant uterus it has nevertheless been pointed out by *v. Leyden*² when discussing the complications of pregnancy by chronic diseases of the heart that the extent of the healthy organism is encroached upon in the pregnant woman by the development of the embryo. "After childbirth the conditions become again different, the resistance to respiration grows less, the breathing gets stronger and the possibility is by no means excluded that respiratory disturbances and congestion of the lungs will thus be caused which may become pronounced only gradually that is in the first days of the puerperium."

¹*Dohrn*, Monatsschrift f. Geburtskunde Bd. 24.

²*v. Leyden*, Zeitschrift f. klinische Med. Bd. 23.

Of 23 tuberculous women observed by the writer 14 died from causes connected with childbirth, 7 of them in the first few days after labour. What *Gusserow*¹ emphasised with regard to pregnant women suffering from heart disease took place here also; they were suddenly called upon to perform a laborious task to which their organism weakened by tuberculosis and pregnancy was no longer equal. A great number of cases communicated by *van Ysendyk*, *Jacob* and *Pannwitz*, *Maragliano*,² *Hamburger* and others ran a similar course. According to *A. Fraenkel* the rapid progress of tuberculosis after childbirth is due generally to a so-called aspiration-tuberculosis as defined by *Hanan*; from more or less extensive deposits in a state of disintegration a quantity of secretion is during the act of labour suddenly aspirated into the bronchi, thus giving rise to a galloping tuberculosis spread in lobular deposits all over the lungs. Of course not all cases run the same course; different observations have also been recorded. The writer has seen a fairly large number of cases of tuberculous women who have stood the ordeals of childbirth very well and retained their ability to work. Social conditions certainly have *some* influence on childbirth, but the difference between its consequences in a proletarian woman and those in one who is socially her superior is not generally so marked as to justify *Hamburger's* inference that special therapeutic laws are necessary for the former class. Tuberculous working-women also can at times withstand childbirth, but it is never possible to foretell this happy issue with anything like certainty. Conception is always in every tuberculous woman a serious danger to health and life, and the development or expulsion of the fœtus is very frequently in apparently recovered cases of tuberculosis the cause of acute recrudescences of a hitherto latent disease.

Equally fatal opinions similar to those on the influence of pregnancy and childbirth on tuberculous patients were prevalent at the beginning of the last century on the subject of

¹*Gusserow*, Verh. d. Charité-Aerzte 1899.

²*Maragliano*, Bericht über den intern. Kongress z. Bekämpf. d. Tuberkulose 1899.

lactation. *Ellinger* distinctly recommended prolonged lactation as a prophylactic against tuberculosis. *Grisolle* was again the first to demonstrate that lactation by tuberculous women may have just as serious consequences for themselves as for their sucklings. Though most of them secrete milk copiously the act of suckling fatigues them considerably and the secretion diminishes perceptibly in a few weeks or ceases altogether. The writer saw not long since a case where a hitherto perfectly healthy woman developed severe tuberculosis during lactation. *Gerhardt* and also *Jacob* and *Pannwitz* forbid such suckling not only in the interest of the mothers but also in that of their children. *Grisolle* has noticed that the milk of tuberculous women frequently causes profuse diarrhœa from the effects of which the infants quickly die if their food is not immediately changed. Post-mortem evidence of tuberculous changes is in such cases unobtainable, and this is in so far important as it has been asserted by some that tuberculosis is easily transmissible from mother to child through the medium of the milk. This theory has as little foundation as the opinion that the milk of tuberculous women is as a rule injurious to the digestion of the suckling, because researches have so far failed to demonstrate a constant alteration in the composition of the milk of tuberculous women.

The secretion of milk is according to *Munk* the most exacting performance of the female organism. The demands made on the economy of the latter are naturally much increased by lactation. The tuberculous organism suffers by it more than the normal. The assimilation of food is diminished, the body-weight decreases and a general condition is created by the act of lactation which favours considerably a rapid development of tuberculous processes.

In estimating the influence of marriage and of its consequences upon tuberculosis little importance has been attached to the stage of the disease and to its clinical form because the injurious influence is generally though not always the same. In the various stages of the illness the consequences of that influence are accordingly different. A tuberculous woman in the third stage of the disease is more liable to die in childbirth than

one in the first whose condition will probably only become worse, or than one apparently cured in whom latent foci may break out afresh and cause a recrudescence of the symptoms.

Tuberculosis as a cause of disease in married life.—In considering tuberculosis as a cause of disease in the married state unequally great importance must be attached to the different forms and different stages of the disease, because though tuberculosis is not necessarily always infectious certain phases of it present a greater or less possibility of infection. This fact is clearly established not only by experiment but also by clinical experience.

The doctrine of the contagiousness of tuberculosis is not as *Cornet*¹ says the daughter of bacteriology but its mother; only because of the conviction that tuberculosis is contagious has the agent of the infection been sought for again and again until it was found in the tubercle bacillus. That conviction however was not by any means universal, and if there were in every century physicians of great fame from *Galen* down to *Lazare Rivière*, from *Schenck von Grafenberg* down to *Peter Frank* and *Weber* whom experience had taught that tuberculosis is transferable from man to man by contagion they were both in number and in the extent of their observation far behind their opponents. It is however of interest in connection with this historical retrospect to learn that all the time during which tuberculosis was regarded as a constitutional anomaly, by far the largest number of exceptions in which the disease was attributed to transmission were thought to be due to heredity in married life. So according to the standpoint which the observers took with regard to these facts—whether they looked upon them as scientific curiosities or whether they saw in them an eternal source of serious danger to the community—they called attention more or less emphatically to the importance of marriage as a disseminator of tuberculosis. They demonstrated numerous cases of tuberculous husbands who had infected several wives in succession, and others in which husband or wife who suffered from a protracted and fairly latent tuberculosis had by contagion produced in his or her partner a far more

¹*Cornet*, Die Tuberkulose. Vienna 1903.

serious and rapidly fatal form of the disease. It is certain that in former centuries industrial activity with its accompanying hygienic harms was not as widespread as it is in modern times and that the importance of married life as a generator of disease was therefore relatively higher than it is at the present day. It must also be remembered that in a large number of the quoted cases the tuberculosis of husband or wife was probably not the only cause of disease in the other partner and that the same noxious circumstances might have produced very frequently the same disease in both of them though perhaps not at the same time on account of their unequal resistibility. Nevertheless it should under all circumstances be taken into consideration that since tuberculosis is according to established theories a disease which is infectious at times the possibility of infection cannot be favoured by anything so much as by married life.

Very frequent attempts have been made to establish from statistics the seriousness of the risk of infection run by either husband or wife where the other partner is a tuberculous subject; but the results and percentages obtained have never been the same. The German collective investigation shows out of 41 cases in which contagiousness was proved 23 cases of infection between husband and wife and *vice-versa*; the proportion in the American inquiry is 158 out of 262, in the French 107 out of 213. But the importance of these figures is diminished by the fallacy already mentioned namely that they do not prove without a doubt that the only cause of the illness lay in the fact that the sufferers were married persons. For this reason it is not possible by these figures to define the amount of danger and the significance of tuberculosis as a national disease; they only tend to confirm the fact. *Jacob* and *Pannwitz* in their investigation have dealt with this objection and their results constitute therefore more valuable material. In 58 cases in which the wife was tuberculous before the husband contracted the disease only 10 showed no other cause than infection; and out of 69 cases in which the husband was tuberculous before the wife became so 42 gave the same result. It does not however appear to me that these figures justify the conclusion

arrived at by the authors that women exhibit a greater predisposition to become infected from their tuberculous husbands, although a theoretical reason for this surely remarkable inference is discernible in the physiological burdens of woman (but not in the ways in which the causative agent is known to produce infection). It must also be admitted that women generally stay more at home and are thus for a longer time exposed to the influence of the sputum which their husbands especially among the working classes are in the habit of expectorating without any regard to hygienic precautions. This is perhaps the cause of the disproportion in the percentage.

Infection through sexual intercourse.—Opinion with regard to the behaviour of the exciting agent of tuberculosis and consequently also with regard to the mode of conveyance of the disease by the contagium vivum has since the discovery of the latter and also as a result of experiments on animals been very much divided. *Jani*¹ has reported in an article which he did not live to see printed and which was consequently published by *Weigert* that he had been able to demonstrate tubercle bacilli in the testicles and prostates of men who had died from tuberculosis while he could not detect either in the neighbourhood of the bacilli or anywhere else the slightest traces of pathological tissue-change. These results could not be appreciated highly enough if they had only been confirmed. But the control-researches instituted at the instigation of *Birch-Hirschfeld* and *Ziegler* by *Walter*² and *Westermayer*³ have shown that the presence of tubercle bacilli in healthy genital organs is an extraordinarily rare event if not an impossibility. Judging from what we know to-day the probability is that the bacilli stained by *Jani* were some other kind of acid-fast bacteria, especially as he did not support his conclusions by experiments on animals.

We are therefore bound to recognise that the transmission of tuberculosis through the medium of the seminal fluid or the sexual act respectively must be excluded from the list of possi-

¹*Jani*, Virch. Arch. Vol. 103.

²*Walter*, Ziegler Beiträge. Vol. XVI.

³*Westermayer*, Diss. Erlangen 1892.

bilities as long as the genital organs are healthy. Such transmission, however, is quite within the range of possibility when these organs are diseased and both experience and experiments have proved this to be true. The well-known experiments of *Gaertner* and *Cornet* have shown that it is possible to infect a female guinea-pig by letting it cohabit with a buck whose genital organs are tuberculous, and clinical observations for instance those of *Schuchart* have shown that a similar mode of infection occurs occasionally in human beings. *Posner*¹ has recently with the help of *Virchow's* post-mortem material endeavoured to find out whether secondary tuberculosis of the genital organs is frequent or rare. He says himself that the results ought perhaps to be multiplied because the reports are naturally defective in the particulars referred to.

It must also be admitted that observations of tuberculous changes in the cadaver frequently lead to far different results when they are carried out with one particular object in view. (*Naegeli*.) Testicles and prostate are not usually examined for tuberculosis in ordinary post-mortem dissections unless there are special clinical indications. This fallacy must be taken into consideration when mention is made of the relatively small number of cases of secondary uro-genital tuberculosis. On the other hand *Kirchner* points out how insignificant the number of these cases is altogether when compared with the enormous amount of post-mortem work performed in the course of a year. And if other statistics for instance those of *Schmorl*, *Rosenstein*, *Thorn*, etc., show a somewhat greater frequency we must not forget that many of these metastases make their appearance when the patients are already in extremis.

On the whole it is fairly certain that secondary tuberculosis of the male genital organs is relatively rare but that whenever it is present in a husband there is a possibility of the wife becoming infected. It is consequently, as *Posner* rightly says, of importance to the practitioner when asked to give his consent to a marriage that he should not overlook the possibility of a tuberculous affection of the genital organs.

Secondary tuberculous changes in the female genital organs

¹*Posner*, Zeitschr. für Tuberkulose und Heilstättenwesen Bd. II.

are even rarer than in the male; when they are present the same or corresponding inferences are applicable.

Infection through the medium of the sputum.—The possibility of infection through the medium of the sputum or of the fæces when they contain tubercle bacilli plays in married life a far more important part than that of infection through sexual intercourse. *Cornet* has refuted the view of the ubiquity of the tubercle bacillus by ingenious experiments and he as well as *Tappeiner*, *Stohl*, *Galtier*, *Schiel*, *Fischer* and others have demonstrated that dust containing tubercle bacilli in a dry but nevertheless viable state is a constant source of danger to individuals who are predisposed to tuberculosis. It is the merit of *Fluegge* and of his pupils to have pointed out the danger of infection through droplets. Though the harmlessness of the air expired by tuberculous patients has been proved by numerous investigations the possibility of the transmission of tuberculosis from mouth to mouth—for instance through kissing—cannot be denied. A portion of the tubercle bacilli coughed up from the lungs may lodge in the mouth so that intimate contact with the patient is never without its dangers. Constant cohabitation extending over many years in the same house, the occupation of the same bedroom, the intimate bodily contact, the use of the same utensils, the gradually diminishing prophylaxis—if it ever was much in evidence—as a consequence of being too familiar with it, all these circumstances make it almost impossible for the healthy husband or wife to avoid infection.

If the tubercle bacillus were the only factor in the causation of tuberculosis the reciprocal infection of husband and wife would not be only very frequent but universal. But though the individuals concerned may be provided by nature with a certain immunity against tuberculosis, it is well known that this immunity can easily change into a condition of an opposite character by intercurrent diseases such as pneumonia, influenza, syphilis, by repeated pregnancies, or by unfavourable social circumstances. While the tuberculosis is a latent one and while there is either no expectoration at all or none containing any bacilli there is of course no danger of infection through this source.

It is however worth remembering that in many tuberculous patients especially in those suffering from the more fibrous forms a discharge of tubercle bacilli takes place periodically so that in spite of very careful examination of the sputum none are detected for a very considerable time until an intercurrent affection, possibly an attack of influenza, causes them to make their appearance or reappearance. A negative result in an examination for tubercle bacilli is therefore some guarantee for the present but not for the future. In any case as long and as often as a tuberculous husband or wife expectorates sputum containing tubercle bacilli he or she is a constant danger to the other partner. For the consideration of the prevalence of tuberculosis as a national disease, conjugal life with an infected individual is therefore even at the present day one of the chief factors.

The offspring.—The incontestable fact that tuberculosis occurs very often successively in different generations of the same family is accountable for the former conception of the disease as a constitutional anomaly. Though as *Virchow* says the doctrine of heredity has received at the hands of medical science most careful and prolonged study there was no hesitation in regarding as purely hereditary even the interrupted appearance of tuberculosis. But when the exciting cause of the disease was discovered in the tubercle bacillus some of the contagionists went to the other extreme of declaring every repetition of tuberculosis in the offspring as due to nothing but infection from their parents with whom they are living under one roof.

According to our present views it cannot be denied that infection does play an important part in the propagation of tuberculosis among the offspring of the tuberculous. The same factors which contribute to the transmission of the disease from spouse to spouse also contribute to its transmission from parent to child, though not perhaps to the same extent. This applies not only to the large number of cases where the disease occurs already in the next following generation but also, though of course not so often, where several generations happen to live together, to those cases where the

succession has been interrupted. It is well known that children are subject to very many diseases of a predisposing character; the injurious influences are frequently, though not as a rule, the same in the parents as in the children; it is therefore comprehensible that the transmission of the parental tuberculosis to the offspring by the infection of individuals predisposed to it occurs perhaps just as frequently as the transmission from husband to wife or vice-versa.

But the theory of infection does not answer in all cases sufficiently, especially in those where the tuberculosis makes its appearance not during childhood and while the parents are ill, but later in life; and also where tuberculosis becomes manifest in the descendants of tuberculous procreators who have been dead for years or possibly decades.

The attempts to explain these cases by the hereditary transmission of the infective germ i. e.; by germinal or placental conveyance of the tubercle bacillus¹ have received but scanty support from the experiments of *Wolff*, *Gaertner*, *Sanchez-Toledo*, etc. and from the observations of numerous pathologists. It is true that a few cases of transmission of maternal tuberculosis have been observed and described in both human and animal fœtuses but their number is so small that it is hardly possible to attach to them any general or practical importance. We must consequently conclude that it is not the bacillus which passes into the offspring but certain bodily peculiarities which favour the development of tuberculosis in subsequent years, in a word, what we call "predisposition." (*Koch*.)

*See*² has remarked with regard to this "predisposition" that the word has only been invented to hide our ignorance, and *Cohnheim* also has added to it the epithet "mystical" because all the attempts to give to this idea of certain bodily peculiarities a firm basis must really be described as failures. For all that, the existence of what we call "predisposition" cannot be doubted even if we are not always in a position to explain its nature or to explain it every time in a like manner. Some believe that it is the so-called phthisical habit or tendency which

¹Compare with *Orth's* article, pp. 39-45.

²*De la phthisie bacillaire des poumons. Paris 1884.*

is inherited, others see in the congenital smallness of the heart the reason why so many descendants of the same family become tuberculous, and quite recently stress has again been laid upon certain articular anomalies in the thorax as being of great importance in the genesis of pulmonary tuberculosis. (*Freund.*)¹ These different opinions are to be accounted for by the circumstance that "predisposition" and "immunity" do not in a mathematical sense represent fixed sums but variable quantities for which we may substitute any value we like, from zero to the unlimited. The predisposition may be local for one particular organ or general for the whole organism, it may last during the whole life of an individual or only during certain stages of the same, it may at times be increased and at others diminished. According to *Gottstein's* definition we therefore understand by predisposition towards a certain contagion that variable quantity which represents the reciprocal relation between the constitutional strength of man and the exciting capacity of a certain bacterium.

If we acknowledge the correctness of this definition of predisposition it is comprehensible that the bodily peculiarities necessary for the commencement of tuberculosis may be either acquired or inherited, but that they are more frequently acquired. Opinion can only be divided on the point whether definite rules can be laid down with regard to the hereditary transmission of predisposition.

The enormous number of existing statistics are of no precise value in the elucidation of these questions, because while the great majority of them, as it can only be expected, disclose with certainty how many times tuberculosis was present among the ascendants of tuberculous patients, they do not record how many times a repetition of the disease could not be ascertained among the descendants of such patients. Only the contributions of *Leudet*² and *Riffel* offer material from this point of view. *Leudet* gives his experiences of a practice extending over 45 years; in 143 families numbering 1485 persons he established heredity in about 50% of the cases. The statistics of

¹Verh. der Berl. Med. Gesellsch. 1901 and 1902.

²Bull. de l'acad. de Med. de Paris, 1885.

Riffel, an elaborate essay on the mortality of tuberculosis based upon church registers extending over 4 to 5 generations of two villages in Baden, are unfortunately not objective in the conclusions of their author. For *Riffel* denies the importance of the tubercle bacillus in the genesis of tuberculosis, since among the cases mentioned by him he alleges not to have found a single one which could serve as an undeniable proof that tuberculosis is transmissible by infection from person to person. And what an important drawback absence of objectivity is in statistics is shown by the ease with which *Kirchner* was able to draw from *Riffel's* own statistics quite different deductions—and rightly so. *Riffel's* statistics also prove nothing more than that tuberculosis is very frequent among the descendants of the tuberculous.

But though there may not be any doubt about this it is surely a mistake to look upon every child of a tuberculous individual as *Maragliano* and *Hamburger* do as a "new tuberculous unit" which is undoubtedly destined to fall a prey to tuberculosis and death. Does not experience teach us daily that such descendants may remain free from tuberculosis as long as they live and on the other hand that some members of such families escape the disease, while others are overtaken by the same fate as their procreators? It is not possible to lay down any definite rules and it never will be possible in spite of all statistics. Because, though inherited predisposition must be regarded as a pathological condition, *Virchow*¹ has already in his classical essay on "Descent and Pathology" pointed out that not every pathological condition necessitates the presence of a disease or is connected with a disease. If the pathological condition of increased predisposition is to become the disease tuberculosis it is under all circumstances necessary that there should supervene the exciting energy of the tubercle bacillus. Considering that the ubiquity of the bacillus has been disproved it should, theoretically speaking, be possible to avoid infection.

We must however remember that although the bacillus may not be everywhere, its diffusion is so enormous that a premeditated attempt to avoid all objects, places and persons that may

¹*Virch. Arch.* Vol. 103.

possibly harbour it could only be described as sisyphæan labour. But since predisposition is a variable quantity, since it may possibly be influenced during life by therapeutic measures, we may conclude that not every individual who has inherited the predisposition acquires the disease as a matter of course, only because the exciting energy of the bacillus is not always great enough and the resistibility of the body not small enough to facilitate the beginning of the disease. It does not therefore follow that a descendant is bound to become tuberculous even if both his parents were afflicted with tuberculosis. It is only thus that we can explain how it is that in some families parental tuberculosis is not transmitted to the children whilst in others all the descendants with or without exceptions fall a prey to it. The question whether and how often a member of such a family who marries a healthy descendant of another family not so predisposed will bring into the world children predisposed to tuberculosis is also unanswerable and will probably remain so in spite of statistics because a child is just as apt to inherit the constitution of its sound parent as that of its diseased one.

In almost all the numerous statistics which deal with the hereditary transmission of tuberculosis very seldom mention is made, under the entry how often the disease occurred among the ascendants of tuberculous individuals, of the mode and time of its origin. And yet this information is of inestimable value to the question of heredity. We must take it that it is highly improbable that a healthy individual descending from a healthy family who becomes tuberculous some time after the birth of his or her children will transmit to them an increased predisposition to tuberculosis; it would for instance be hardly correct to consider so predisposed the descendants of a diabetic patient in whom tuberculosis supervenes sooner or later as a complication of his or her disease. Or is it right to assume that a descendant is predisposed to tuberculosis because an attack of pneumonia in his father ended not with resolution but the supervention of tuberculosis many years after the birth of the former? These and similar cases have nothing to do with the question of heredity. Were we to have statistics on

such points also the results would perhaps be different than hitherto.

Only if the father or the mother was predisposed to tuberculosis at the moment of conception is there a possibility or probability of this predisposition being inherited; with regard to the hereditary transmission of the maternal predisposition we cannot even take into consideration the period of pregnancy up to the time of labour.¹

Permission to marry.—It will therefore never be possible to tell with certainty whether the disease which was present in the parents will also make its appearance in the children. For this reason it is also impossible to lay down any fixed laws with regard to consenting to the marriage of such individuals as are predisposed to tuberculosis. Material or social considerations, occasionally perhaps dynastic motives, must in each single case influence the decision to be arrived at, one way or the other. But if the "higher standpoint of causality" is looked upon as justified in the interests of the welfare of succeeding generations, if the right is conceded to the medical profession to weigh the possible damage to the offspring in opposition to the advantages of the individuals already existing, it behoves us to do our utmost to prevent the marriage of individuals predisposed to tuberculosis, or at least their propagation.

The attempt to restrict the marriage and propagation of tuberculous individuals has however been described by *Reibmayr* as an unjustifiable interference with the natural method of selection. This author tries to prove by minute reasoning and especially on the basis of the works of *Riffel* and *Ammon* that by the marriage of individuals affected with or predisposed to tuberculosis not an increased predisposition towards this disease is inherited, but an increased resistibility against it. In-breeding continuously practised by such individuals would therefore in the course of centuries result in a complete immunity of the human race against tuberculosis. These conclusions though ingeniously arrived at have been rightly called heretical. They are paradoxical and incorrect analogies from natural philosophy

¹See *Orth's* article, pp. 39-45.

which it would be highly dangerous to introduce into practice. For according to *Reibmayr's* erroneous teaching we should have to regard the phthisical habit and the paralytic thorax, as *Scheimpflug* correctly points out, not as symptoms of deficient development but as signs of a higher resistibility. In spite of the able manner in which *Reibmayr* endeavours to prove the correctness of his proposition and the justification of his demand that the marriage and propagation of tuberculous individuals shall be encouraged, experience seems to go against him; his theory is fortunately not practically realisable.

The attempts of the medical profession to prevent as far as it lies in its power and without a dereliction of duty, the marriage of individuals predisposed to tuberculosis will often result in failure on account of the incompatibility of the advice with material, physical or psychological circumstances. For where a proletarian f. i. consults his doctor before his marriage—a thing which does not happen very often—he is not likely to listen seriously to a dissertation on the probabilities of the future. Nor will persons belonging to the better classes often be able or willing to sacrifice their personal happiness or prospects for the sake of those coming after them. To give up the idea of marriage under such circumstances is often an act of heroism of which we read in novels but not one of which the average man or woman is capable. Nevertheless this does not debar the doctor from giving to those who consult him his unbiased and warning advice.

In permitting tuberculous individuals to marry it is necessary to follow certain fixed principles with regard to the different classes of the disease and also with regard to individual cases. If we take the advantages of marriage of tuberculous people on the whole and compare them with the disadvantages and dangers, the latter no doubt preponderate over the former. If it is therefore necessary as a rule to oppose the marriage of tuberculously affected individuals with far more energy than that of persons only hereditarily predisposed to tuberculosis, it is nevertheless, in view of what has been said above, an established fact that circumstances may occasionally arise where the advantages of marriage outweigh the disadvantages, where

there is either no danger at all involved by marriage, or where, if present, such danger may be materially diminished by suitable prophylactic or therapeutic measures.

I have in my mind the following concrete case: A considerable legacy was left by will to an inpecunious individual with double apical pulmonary tuberculosis by a rich relative on condition that he should get married. The patient, a cautious and considerate man, who was well aware of his condition, would not marry without the consent of a medical man, and the young lady who was to be his wife was willing to undertake the risk which was explained to her. Under the circumstances I gave my consent to the marriage without any hesitation, reflecting that an improved pecuniary position was more likely to lead to a permanent cure.

Apart from such special considerations, it is of the greatest importance with reference to the question whether tuberculous individuals should be allowed to marry, that differentiation should be made between fresh and rapidly progressing cases and those which are insidious or entirely at a standstill. This is not the place to enter into a minute and elaborate discussion of the delicate signs of complete recovery from tuberculous affections; and although it is generally difficult to prove, there are doubtless many persons who have years or decades previously manifested signs of tuberculous disease of the lungs, such as hæmoptysis, but whose sputum does not contain any bacilli and in whom there are neither physical signs demonstrating the existence of recent changes in the lung-tissue nor subjective symptoms, and whose general state and resistibility may be described as perfectly normal.

The result of test-injections of tuberculin is unfortunately

Translator's note: It would be interesting to have the after-history of this case. A somewhat similar one occurred in my practice some years ago, which had unfortunately a very sad ending. I was practically compelled to consent to the marriage of a young couple who had committed a severe indiscretion. The circumstances were in every sense favourable except that the young man had a family history of consumption, and he himself showed some early symptoms. I had reason to hope for the best, but in less than 2 or 3 years' time I heard that the young husband had died abroad from galloping consumption.

of very little assistance in such cases, but as far as we can clinically prognosticate at all we are justified in assuming complete recovery, and that such complete recovery does take place very frequently has been clearly shown by the researches of *Naegeli*. Under such circumstances and especially in the case of men, it is advisable to explicitly recommend marriage, provided, of course, that there are no unfavourable economic conditions to contra-indicate it. Where ordinary human foresight tells us that in all probability the material circumstances will by marriage undergo a change for the worse, that want and consequently insufficient nutrition and an increased amount of manual labour will in all likelihood cause the recrudescence of old deposits, our advice will certainly tend in a different direction. In the case of females it is necessary to be still more careful in giving the consent to marriage, for the dangers of pregnancy and labour as causes of severe relapses must not in any way be underrated.

In fresh cases of pulmonary tuberculosis the sex of the individual is not of very great importance with regard to the decision whether marriage should be permitted, seeing that this permission will probably have to be withheld in every case. Exceptions, like the one mentioned above, only confirm the rule of prohibition. For it is impossible without constant observation to prognosticate the further course of the disease with anything like certainty. And as the probability is great that the duration of life will be shortened where tuberculosis has made its appearance the prohibition of marriage is a necessary medical precaution. The expectoration of tubercle bacilli in particular requires most careful consideration; a married individual who expectorates tubercle bacilli is a highly dangerous source of infection to his or her married partner, and for this reason alone such persons must be dissuaded from marrying after being enlightened on the subject. On the other hand, it would be disastrous always to draw a contrary conclusion from a negative result of an examination of the sputum, and to be thereby influenced in a sense favourable to marriage; in this important question also, the condition of the sputum must not be the only determining factor. The presence of secondary tuberculosis

of the genito-urinary organs is for the same reasons a strict contra-indication against marriage.

Gerhardt has recommended that tuberculous persons should be advised to wait at least one year before being permitted to marry. This interval appears to *Jacob* and *Pannwitz* to be too short. From what we know of the biology of the tubercle bacillus, its vitality and activity in the human body during a period of 3 years is by no means impossible, and 3 years should therefore be the minimum interval of postponement. If there are no signs of the progress of the disease during that time, such as hæmoptysis, pleurisy, physical signs of fresh specific catarrh over the apices of the lungs, renewed expectoration of tubercle bacilli, strong subjective symptoms, emaciation and night-sweats, the possibility of consent to the marriage may come into consideration. It is moreover always the duty of the medical man, as *Virchow* would have it, to ignore all psychical and sentimental motives and to call the attention of the patients to the uncertainty of the latent stage of tuberculosis. In any case the doctor must see that the candidate for marriage does not leave his intended wife or her relatives in the dark with respect to his condition and the uncertainty of the prognosis, where he cannot for reasons of professional secrecy convey the information himself. Because the dangers of moral disappointment are never so great as those of even latent tuberculosis.

It is therefore clear that the decision on the part of the medical man as to whether a tuberculous individual may marry or not, is one of the most responsible which fall within his province. But just as important and just as significant are his duties and obligations towards the family, where one or the other of the married partners is the subject of tuberculosis.

Sexual intercourse during married life.—In such cases it will hardly be possible to avoid instructing both husband and wife with regard to the frequency of their sexual intercourse, a point which is still in the eyes of many forbidden ground. Seeing that tuberculous individuals are often the subjects of increased sexual desire, the danger and injuriousness of too frequent sexual intercourse must be pointed out to them,

and attention must be paid as far as possible to all those elements which co-operate in producing the increased desire, and the necessary therapeutic treatment must be instituted towards its removal. Where the genital organs exhibit tuberculous changes intercourse will on account of the danger of infection to the other partner have to be permitted in the form of condomatic coitus only.

Prophylaxis in the married life of tuberculous persons.—From a prophylactic point of view it is desirable where the pecuniary circumstances permit it that the tuberculous husband or wife, especially if the expectoration contains tubercle bacilli should occupy a separate bedroom. Where this is not possible it is at least advisable that the beds of husband and wife should be placed as far from one another as the size of the room will allow. The remaining prophylactic precautions are the same as those indicated in every case of tuberculosis. Kissing must be altogether prohibited, and not only on the mouth. A careful removal of the sputum and disinfection of the sputum-holder is essential as are also the use of separate utensils, the adoption of certain precautions with respect to personal linen, special cleanliness of water-closets where one of the inmates of the house suffers from secondary intestinal tuberculosis, etc., etc.

Artificial abortion.—In addition to these general prophylactic measures special importance attaches to those indicated when a tuberculous woman becomes pregnant or when a woman exhibits undoubted signs of pulmonary tuberculosis in the course of her pregnancy. For years, even after pregnancy had ceased to be regarded as a natural aid in the treatment of tuberculous processes, the medical profession considered it the right thing in such cases to remain as a rule silent spectators. Partly from religious scruples, partly from legal considerations¹ and partly also because the significance and dangerousness of the interference were not thought commensurate with its probable advantages, medical men were averse to the idea of arresting the pregnancy prematurely, by the induction of artificial abortion or of premature labour.

¹Kossmann. Verh. d. Berl. Med. Gesells. 1901.

The first to anticipate beneficial results from such a course of action was *v. Leyden* who says in the conclusion of his work on the complication of pregnancy by chronic diseases of the heart as follows: "The question, whether in cases of tuberculosis it is not possible to arrest occasionally the weakness of the heart and to preserve the life of the woman by putting a premature end to the pregnancy, is of especial importance on account of its frequency. My experience tells me that tuberculosis in women is doubtless aggravated by repeated pregnancies."

Gerhardt also, in his lecture on the contraction of marriage by tuberculous individuals, emphasizes that where a pregnant woman surely and steadily loses strength in consequence of the disease of the lungs the question, whether the condition of the mother justifies the medical man in inducing artificial abortion, must doubtless be answered in the affirmative. Particularly so, as in cases where tuberculosis makes its first appearance at the beginning of the pregnancy a possibility to treat it successfully by the administration of hygienic-dietetic remedies can often be obtained only by the artificial interruption of the pregnancy.

The question of the advisability of abortion in tuberculosis has however found an almost enthusiastic supporter in *Maragliano*: he demands that the pregnancy of every tuberculous woman shall be artificially interrupted. We must not wait until special disturbances or dangers have arisen to the patient by the pregnancy, either from purely mechanical conditions or as a result of disordered nutrition: the more circumscribed the tuberculosis and the better the general condition the more this interference is called for. The standpoint from which we should look at the matter is not that of symptomatic advisability, but rather "the highest standpoint of causality." *Maragliano* concludes literally as follows:

"If we mean seriously and intentionally to protect humanity against tuberculosis it is necessary to divest ourselves entirely of all sentimentality with respect to the hypothetic rights of the fœtus, and to consider the latter altogether of secondary importance as compared to the mother. If we bear in mind at the same

time the great influence which the mother exercises upon the organism of the future being, including a possible transmission of the disease to the latter, the interference becomes still more justified, since by it we not only cause positive advantage to the mother who is saved from the dangers of the pregnancy, but we at the same time prevent the addition of a further tuberculous unit to mankind in general."

Since 1893 *Maragliano* has in his clinic carried out this principle, and his personal experience has convinced him that the patients get better and are "cured" soon after the evacuation of the uterus.

With regard to the interruption of the pregnancy in tuberculous women it is necessary to distinguish on principle between induction of abortion and induction of premature labour. *Kleinwächter* and *Schauta* recognise generally very few indications for the induction of abortion; the former, especially because he does not consider the prognosis absolutely favourable, even if the operation is conducted with all possible care, seeing that it produces a violent commotion in the whole organism of the woman, a circumstance bound to have great effect in the case of one suffering from disease; the latter because he thinks the result of the operation very unreliable.

In the Berlin Royal Policlinic for patients with lung-diseases the question of the advantages and disadvantages of artificial abortion in tuberculous women has for about 4 years received very careful consideration. The operations have been performed by medical men with a specialist training, and there has never been any complication or unfortunate accident in connection with the cases, a fact worth special mention in view of *Kleinwächter's* pessimistic opinion. As regards the influence of the operation on the disease, the statistics published by me in 1901 show that there has been an aggravation of the condition in 30% of the cases, 12% ended in death after a more or less continued treatment, and 70% remained at a standstill. The cases which have been admitted since, do not give any materially different percentages. But as to a "cure" such as *Maragliano* says he has often seen, there has not been, as it was fully to be expected, a single one; for pregnancy is not the

exciting cause of pulmonary phthisis. Subsequently *Kuttner* has included in his observations the question of the induction of abortion in tuberculosis of the larynx, and has energetically recommended the operation in certain cases.

Hamburger has in like manner taken up a definite position on the question especially in reference to working-women, and inclines to the view of *Maragliano*, the so-called "higher principles of causality." He is in favour of abortion being performed in every tuberculous working-woman, if there is no doubt about the diagnosis, and as a decisive criterion for the latter he regards the presence of tubercle bacilli in the sputum. This generalisation, even for special classes, is for this reason not desirable and occasionally even injurious, because as we have already seen not every case of tuberculosis, not even in working-women, is aggravated by pregnancy, and because on the other hand, not every case of tuberculosis which has been aggravated by pregnancy can be arrested in its unfavourable course by the induction of abortion.

The operation is least justified in those advanced cases the prognosis of which may be regarded as hopeless—with or without pregnancy—and where we can hardly expect to prolong the life of the patient, but where there is on the other hand a chance of a living child being eventually born. The fear of *Maragliano* and *Hamburger*, which is not always justified, that a further tuberculous unit will be added to mankind would if carried to its logical conclusion render abortion indicated in those cases also where the father is tuberculous.

The contra-indication on account of the bad prognosis must apply to the majority of the cases of laryngeal tuberculosis (*Löhnberg*); because, although it is proved that tuberculosis of the larynx may in rare cases occur primarily and be cured, yet as a rule it is secondary and present in very severe pulmonary affections only. For this reason *Löhnberg* is quite right when he maintains that the restriction to exclude all hopeless cases must unfortunately embrace almost entirely the tuberculous diseases of the larynx. *Kuttner's* recommendation will therefore but very seldom be acted upon in practice.

The operation may be carried out only in such cases where

judging from our knowledge of tuberculosis there is a possibility that the disease may be cured or an improvement obtained which will certainly last for years. If in the course of such cases pregnancy supervenes, and a marked aggravation of the pulmonary disturbance or in the general condition becomes apparent which is the direct consequence of the pregnancy only, the question of the induction of artificial abortion may arise as a possible therapeutic measure; likewise if in the course of a pregnancy the first symptoms of tuberculosis make their appearance, or if hæmoptysis, metastatic tuberculosis or pleurisy occurs. Especial regard must always be paid to the physical condition of the patient, or as *v. Leyden* calls it, to her "disposition." It is therefore understood that we are not under any circumstances obliged to induce abortion in tuberculous pregnant women. This important question cannot, as *Margliano* desires, be answered generally, but must be decided individually in each separate case. We must however always remember that the possible help thus rendered to the mother is dearly bought, bought at the cost of a future human life, and that the sacrifice should at least be compensated for by a substantial gain to the mother.

Artificial premature labour.—The second possibility at our command, namely the interruption of the pregnancy by the induction of artificial premature labour, is an interference which is justified on the rarest occasions only. The dangers of pregnancy in tuberculous women are greater, the complications more frequent and the suffering of the patients more severe during the first months of the pregnancy than during the last, and rapid aggravations are to be feared only from the moment labour-pains set in until the end of the puerperal state. What *Gusserow* has rightly pointed out with respect to pregnant women suffering from heart disease, namely that the danger of labour diminishes in proportion to the rapidity of the labour act, applies equally in the case of those suffering from tuberculosis. The induction of premature labour is an uncommonly difficult operative interference, the consequences of which to the whole organism are not to be compared with those of artificial abortion. The pains are exceedingly weak, the delivery

lasts much longer than in normal labour, often several days, and for this reason artificial premature labour causes in 90 cases out of 100, as *Gusserow* also truly says, a much severer task and consequently a much greater danger than normal childbirth.

With the idea to help the mother, the induction of premature labour is therefore never to be recommended. The possibility of its indication exists only where the debility of the mother becomes rapidly so much worse, that her death is likely to occur before the normal end of the pregnancy and that the life of the child can only be saved by the artificial interference.

Prevention of conception by tuberculous women. — If we bear in mind the dangers which tuberculous women incur by becoming pregnant, and the narrow limits within which we may resort to artificial abortion; if we recollect the fact that although the operation is in many cases likely to be successful, we can never foretell the success with certainty, it will be regarded as one of the principal duties of the physician to endeavour by all the possible means at his disposal to prevent the conception of tuberculous women. (In another chapter of this work will be found a dissertation on the utility of these preventive means.) The justification of their application does not lie in the intention to prevent the propagation of tuberculous individuals as "future tuberculous units," but exclusively in the attempt to save the tuberculous woman from the dangers with which she is threatened in consequence of conception.

Prohibition of lactation by tuberculous women. — There remains yet to be mentioned that in numerous cases where tuberculous women have had normal labours, the lactation is to be strictly prohibited, whether the pregnancy and childbirth have been well borne or not. Moreover, seeing that lactation makes great demands upon the whole organism, it is necessary to forbid it even in such cases where the diagnosis is not absolutely certain and where there is only a suspicion that the mother is predisposed to tuberculosis. It is equally necessary to wean the child immediately, where the mother commences to show tuberculous symptoms in the course of the lactation-period.

2. *Bronchial Asthma.*

Next to tuberculosis bronchial asthma is of the chronic diseases of the respiratory organs the one which deserves perhaps the greatest amount of consideration from the point of view of those who are about to contract marriage. Not, of course, to the same extent as tuberculosis, since all those factors which are of such enormous importance to the whole of mankind where the question of marriage arises in connection with tuberculous persons are absent in asthma, a disease which is, by the way, relatively very prevalent. For the bronchial asthma of the husband or wife causes no danger to the other partner, but at the outside a certain amount of inconvenience and discomfort. Nor is the opinion of some authors that the disease is particularly often inherited sufficiently proved by statistics, or generally shared. It is true that *Salter*¹ has been able to demonstrate heredity in 40% of his cases, but *Berkart*² could not do so in more than about 16% of all those which he has observed. At any rate the number of cases upon which both these statistics are based is too small to permit a decisive conclusion with regard to the theory of the hereditary character of asthma to be drawn from them. The fact that the disease is occasionally present both in the parents and in one of their children does not justify its inclusion among the genuine hereditary diseases. On the other hand *A. Fränkel*³ points out that the family predisposition need not necessarily manifest itself in such a manner that the parents particularly suffered from asthma; but different brothers and sisters may exhibit the disease and yet the parents may have been always free from it.

There is consequently more reason to attribute the common disease to some common cause as f. i. rickets during childhood, which has very often been accused in this connection. But this is also an hypothesis which has very little in its favour, seeing how difficult it is to bring it into agreement with the general view prevalent at the present day that bronchial asthma is a reflex neurosis.

¹The Asthma. London 1860.

²The Bronchial Asthma. London 1883.

³Spec. Pathologie u. Ther. d. Lung. Vol. II, Berlin 1902.

Only by holding this opinion it is possible to obtain a uniform notion with regard to the collection of symptoms which we call bronchial asthma and which is the result of so many different causes. According to *Fränkel*,¹ the peculiar constitution of the nervous system of the sufferer from asthma which is responsible for the predisposition to the disease is the outcome of an hyperæsthesia of the nervous regions which are in immediate relationship with the respiratory tract. Theoretically it ought to be possible to say that the more circumscribed the point of excitation (nose, uterus) the better the prognosis, on account of the greater ease with which therapeutic remedies can be applied, and that the prognosis is worst where we do not know the locality of irritation at all, and where we must suspect the cause of the bronchial spasm to lie in the abnormal irritability of the bulbar respiratory centre.

But although the simultaneous occurrence of nasal polypi and bronchial asthma, first demonstrated by *Voltolini*, and to which *Hack* afterwards added diseases of the lower muscles, led in a number of cases to a cure of the asthma by local treatment, this success was not achieved in a perhaps far greater number of cases.

It is therefore, to say the least, very uncertain whether the prognosis of such cases of asthma which rest upon abnormalities of the nasal mucous membrane may be declared particularly favourable, and this is a circumstance not without importance with reference to the question of consent to marriage.

Neither does the better defined sub-division of the disease from the standpoint of prognosis, as suggested by some asthma-therapeutists (*Bruggemann*)² offer any practical guide for judging beforehand the course of the disease and a possibility of really successful treatment.

Consent to marriage in cases of bronchial asthma.—For although our knowledge of the genesis and course of asthma is greatly increased, it cannot be denied that our ability to treat the disease otherwise than symptomatically has with the above-mentioned exceptions remained the same as

¹*A. Fränkel*, l. c.

²*Das Asthma*. Wiesbaden 1901.

before. And if in a few cases there has been a spontaneous cure, asthma must on the whole be included among the incurable diseases. The disease extends, however, over such a long period of time, and the duration of life in those suffering from bronchial asthma is by so little different from what it is under normal circumstances, that it can hardly always be regarded either in the man or in the woman as a decided impediment to marriage. The case is however different where the usual results of long-standing asthma and of frequent attacks, such as severe emphysema, hypertrophy and dilatation of the right ventricle, tricuspid regurgitation or renal-disorders, have made their appearance. The frequency of the attacks is also of decisive prognostic importance; for although death very seldom ensues during an attack, it must be taken for granted that the longer the interval between two successive attacks, the slower the rate at which changes in the lungs and in the heart take place. It is also, perhaps, worth mentioning that the kind of "asthmatic diseases" which are to be regarded almost exclusively as idiosyncrasies, that is, which appear only in consequence of certain conditions (climatic injuries, hay-fever) can never form a contra-indication in the contraction of marriage, since the causative factors can easily be avoided.

Sexual intercourse and pregnancy in bronchial asthma.—As regards the bronchial asthma of young girls, there have been several cases observed where marriage had a beneficial effect.

Thus *Peyer*¹ mentions the case of a girl who was asthmatic, who married, became pregnant and gave birth to a healthy child. During the time of pregnancy she was absolutely and perfectly well. Later on, the attacks appeared again, and were removed by local treatment of the uterus. The writer has also seen a striking case of improvement in an asthmatic young married woman. Before her marriage the attacks used to occur on an average every 4 weeks; after she was married the number of the attacks diminished so considerably that there were often intervals of 6 months and longer between any two of them.

This phenomenon is probably associated with the exercise

¹Berliner Klinik. 14.

of the sexual function, as we must assume that by the gratification of the desire there is caused a reduction in the general irritability of the nervous system and consequently also in that of the nervous tracts connected with the attacks.

There have only been very few communications made on the course of pregnancy in asthmatic women, which may probably be accounted for, by the fact that no peculiarities or complications have been noticed. For this reason it is perhaps advisable that I should mention the case of an asthmatic female outpatient in whom I observed an especially great inclination to miscarriages, all of which happened after asthmatic attacks and which were probably in close causal relation to the latter.

The question may also crop up occasionally whether the presence of bronchial asthma justifies recourse to artificial abortion.

Generally speaking, the necessity for this will, in view of the nature and prognosis of the affection seldom arise. The operation will have to be performed only where in the course of the pregnancy the attacks are so frequent and of such long duration that the life of the mother is in danger. This is however likely to happen but in rare instances.

The question whether asthmatic mothers should be permitted to suckle their infants is also not likely to form very often a subject of doubtful consideration. For although special influences on the course and severity of the disease are hardly ever likely to be noticed, it is nevertheless advisable as a rule to recommend sufferers from asthma to refrain from lactation since the secretion of milk must exercise a debilitating effect upon their organism.

3. *Emphysema.*

The significance of the remaining chronic diseases of the lungs with regard to the married state is to a certain extent a limited one. A large number of them, such as malignant tumours of the lung, larynx and mediastinum (carcinoma, sarcoma) have, where they can be diagnosed, such an absolutely bad prognosis that the question whether an individual affected with one of them should be permitted to marry or not is not

likely to give rise to any discussion at all; with regard to others, such as actinomycosis, echinococcus, syphilis of lung, etc., there does not seem any necessity to dwell on the point, partly for the above-mentioned reasons, and partly also because these diseases are so infrequent that they may well be designated as clinical rarities. With regard to the rest of the pulmonary and laryngeal diseases we may generally say that though they are relatively very prevalent, they diminish but very little the life-duration of those who are subject to them, and do not very materially lower the activity and working ability of the patients. Some of the affections finally commence fortunately—at least as a rule—at a time of life when the contraction of marriage is only exceptionally thought of.

A somewhat more detailed consideration however seems indicated with respect to *emphysema*. As to the genesis of emphysema opinion does not appear as yet to be unanimous. Only that much is certain, that emphysema is occasionally, though not very frequently, observed at an early age, and that it is not always a consequence of chronic bronchitis. And moreover as the disease appears sometimes in young persons as a result of occupational injuries (blowers) the physician may have the question addressed to him whether an individual suffering from emphysema should be allowed to marry or not. The answer must undoubtedly be in the affirmative; for although a man subject to emphysema cannot on account of his dyspnoea be regarded exactly as an ideal husband his working ability is nevertheless not materially diminished and his probable expectation of life, should no secondary symptoms appear, is only slightly shortened. But where the consequential results of emphysema which are practically the same as those of bronchial asthma have already made their appearance, marriage will probably have to be opposed in the generality of cases.

Emphysema is far more rarely present in women than in men and this fact as well as the circumstance that peculiarities are hardly likely to occur, explain how it is that there are no detailed contributions to literature on the course of pregnancy, labour and childbed of emphysematic women. It is, however, to be presumed that the shortness of breath is in pregnant

women as a rule considerably aggravated by the high position of the diaphragm and that the sequelæ of emphysema may thus possibly be hastened. For this reason it does not exactly appear desirable that emphysematic women should become pregnant, but on the other hand the danger is not so great as to justify the adoption of anti-conceptional remedies or the artificial interruption of existing pregnancy. Lactation on the part of emphysematic women may also unhesitatingly be permitted, though there may be special cases where it is contra-indicated.

4. *Chronic Diseases of the Bronchi.*

Chronic bronchitis.—Chronic bronchitis is also to be regarded as a relatively harmless complaint. The often repeated assertion that ordinary bronchitis may turn into tuberculosis is not scientifically proved, and such a transition is very seldom seen in practice. Chronic bronchitis has no influence in shortening the life of those subject to it, and cannot therefore be looked upon as an indication against marriage. Nor has ordinary bronchial catarrh any effect upon pregnancy. *Fellner*¹ attributes to it only a slight increase in the cyanosis and in the dyspnœa which is a physiological accompaniment of pregnancy.

Fibrinous or plastic bronchitis has probably on account of its prognosis been sub-divided into an acute and chronic form. In the acute, the prognosis is always very uncertain and very serious because of the possibility of death by suffocation through the fibrin coagula. For this reason it is not advisable to give the consent to marriage too soon. The chronic form of fibrinous bronchitis has a much better prognosis. It often disappears just as quickly as it appears, without it being possible to find any special causes for its appearance or disappearance. Thus, f. i., I have been watching a case for the last 4 years (minutely described by *v. Raven*² which has been running its course since 3½ years without any symptoms whatever. *Chronic* fibrinous bronchitis, where it is not to be regarded as a complication of other organic diseases (heart

¹Die Beziehungen innerer Krankh. zu Schwang. Geb. u. Wochenbett. Leipzig-Vienna 1901.

²Zwei Fälle von Bronch. fibrin. Dissert. Berlin 1902.

disease, tuberculosis) will therefore in the generality of cases not form an obstacle to marriage.

Foetid bronchiectasis and bronchitis.—As regards, finally, those diseases of the respiratory organs the principal feature of which consists of a more or less marked foetor of the breath, such as foetid purulent bronchitis, the saccular, cylindrical and multiple forms of bronchiectasis, this defect alone is sufficient to cause some hesitation in the granting of the permission to marry, since it must prove a constant source of disgust to the married partner living in close intimacy with a person thus affected. For this reason and from the fact that the prognosis of this disease is an exceedingly serious one (much more serious in bronchiectasis than in purulent bronchitis, which may occasionally terminate in recovery) we may draw the conclusion that individuals suffering from these diseases of the respiratory organs, must be energetically advised not to marry.

XII

Diseases of the Organs of Digestion in Relation to Marriage

XII

DISEASES OF THE ORGANS OF DIGESTION IN RELATION TO MARRIAGE

By **Professor C. A. Ewald** (Berlin)

If we consider the reciprocal relations between marriage and the functions or disturbances of the digestive organs from the medical point of view we find that the gain which accrues to the organism from this union is undoubtedly like in so many other respects greater in the case of the male sex, and that the poor wife derives from the married state a plenteous harvest of ill-health. The salubrious advantages which marriage brings to her are decidedly outweighed by the disadvantages. For this reason the greater part of the following remarks will be taken up by diseases which affect the female married partner.

In point of fact the above statement hardly requires any proof; the latter will doubtless become evident from the subsequent observations.

Beginning first with that which is common to both husband and wife, it is clear that the gain which an harmonious and happy marriage must bring to both of them generally, and in respect of the digestive functions in particular, is so obvious that it is not necessary to waste any words about it. Psychical and physical well-being towards which a well-regulated sexual intercourse contributes a by no means unimportant share co-operates in influencing favourably the course of the vegetative functions, and in especial those of the digestive organs. It is only after they are married and free from the dull oppression and unsatisfied longing of bachelor-life that many men begin to understand what it means to be healthy in body and healthy in mind.

On the other hand, the disturbances of digestion which we

must attribute to married life are partly of an indirect and partly of a direct character.

Disturbances of digestion through psychological factors.—To this category belong all those factors which influence the soul directly and the digestive tract only indirectly, and which are called forth by the troubles and perturbations connected with the married state. Naturally this refers to the husband no less than to the wife.

Nervous complaints.—The struggle for existence and the maintenance of the children, illness in the family and other anxious cares react in many individuals on the digestive apparatus and produce the most various disturbances in the same. This is ancient wisdom, and *Shakespeare* knew what he was saying when he makes Henry VIII pronounce sentence of death on Cardinal Wolsey by the words: "Read over this, and after this: and then to breakfast, with what appetite you have." These disturbances may affect all parts of the digestive tract, from the mouth down to the large intestine and anus, and manifest themselves by most variable so-called nervous complaints. There are people who when they are troubled or excited cannot "swallow a bite," not because the mechanism of deglutition is out of order, but because the secretion of saliva is insufficient and the food-boli are consequently not rendered slippery enough to be gulped down the entrance into the œsophagus, so that they "stick in the throat." In others there occur conditions of depression in the secretory and motor functions of the gastrointestinal canal. If the gastric juice is examined in such cases, the analysis shows a diminished amount of *HCL* and of pepsine, often associated with the characteristic symptoms of motor weakness or of atony of the muscular walls of the stomach. This applies also to the intestines. Tendency to flatulence, constipation or an irregular action of the bowels accompanied by intercurrent pseudo-diarrhœic evacuations are the most prominent symptoms. I have never yet under such conditions noticed an inclination to an increased action of the stomach, say in the form of hyperchlorhydria, or gastrosuccorrhœa, etc. This might possibly be said to be the case with the intestines which show occasionally a tendency to increased peristalsis or better

said to more frequent evacuations. But this occurrence also is perhaps due to a weakness of the large intestine rather than to an increased function of the small intestines. What part is played in these disturbances by an altered activity of the liver is for the present entirely beyond our knowledge.

But in other directions as well, married life is capable of producing all kinds of injury to the digestive functions. I allude to the nervous disorders which arise from an excessive sexual intercourse or from an abnormal performance of the sexual act. Both are more frequent than one would imagine and we hear occasionally most incredible confessions in this respect. There is no necessity to enlarge on this point which has already been discussed in a previous chapter (see Article by *Fürbringer*) of this work, but I wish to point out that it is the various forms of the preventive mode of intercourse which most pre-eminently seem to occasion nervous reflexes upon the digestive tract. Probably more for moral than physical reasons, but possibly also because newly married people in particular are apt when practising preventive intercourse to disregard the natural abstinence imposed by pregnancy and parturition, and thus to create a constant irritability of the nerves constituting the pudendal plexus and also of the nervous system generally. One might retort against this that in sterile marriages there is also no "close-time", and yet they do not show any particular predominance of nervous and especially nervous-dyspeptic conditions. I have however frequently been assured by gynæcologists that in precisely this sort of marriages, a certain sexual frigidity often appears very early which excludes the possibility of sexual over-indulgence. However that may be, there is no doubt that we see cases by the hundred in which the beginning and progress of nervous gastro-intestinal disorders may be traced to this source. It is only natural that we should meet it oftener in men than in women, since the latter do not altogether experience as a rule such severe perturbations of the nervous system from the exercise of the sexual act as the former.

1. *Diseases of the Stomach and Intestines.*

We know nothing certain about a direct infection or trans-

mission of an organic disease of the digestive apparatus from husband to wife or *vice-versa*. All that we might perhaps have to consider in this connection are cancerous and possibly also tuberculous affections which may appear in the course of the gastro-intestinal tract. Cases have repeatedly been observed of husband and wife who have been attacked in quick succession by cancer of the stomach or of the intestines; but whether we should in such cases admit a direct transmission of the disease through the common use of utensils, such as spoons, forks, knives, cups and plates, etc., is, on account of the incomplete knowledge we possess on the etiology of cancer, impossible to say.

Influence of marriage on the digestive functions of the husband.—As regards the sterner sex, it is unquestionable that marriage is in the case of many young men a beneficial change from their bachelor-life and the deficient and irregular meals often associated with it and no less often compensated for by excessive drinking. The possession of a well-regulated home of one's own brings as a rule to the abused and over-irritated gastro-intestinal apparatus careful and suitable nourishment and attention. The provision of suitable food and especially of food for invalids, is indeed often a serious difficulty in the case of bachelors who have not their own household, particularly in small towns, although philanthropic societies have recently been formed f. i. in Berlin, to supply the deficiency to a certain extent by the establishment of public kitchens for invalids which distribute proper food in the various parts of the town. In some places proprietors of restaurants are also prepared to supply the requisite dietary articles according to prescription. But on the whole, these arrangements do not apply to the vast majority of men, and it is the married state in which most bachelors hope to find the food suited for their individual cases.

Translator's note: The author has evidently forgotten to add that the same cause may have operated in producing cancer in both the husband and the wife, seeing that they are constantly exposed to the same injurious influences, and that infection from person to person may have nothing to do with the matter.

It is not only invalids, however, who derive benefit from marriage; the well-regulated mode of life with its regular and uniform meals usually associated with the married state is to healthy husbands also an advantage by no means to be despised. To this we may add that a considerable number of men, from a sense of the responsibility involved by the creation of a household, abstain from a number of extravagances which would otherwise undoubtedly cause gastric and intestinal troubles. This is so self-evident that we can dismiss the subject with these few words.

These advantages are counterbalanced by the few inconveniences or disturbances which arise to the husband from the married state and which have already been enumerated above.

Influence of marriage on the digestive functions of the wife.—The special effects which married life exerts on the digestive apparatus of the wife are connected in the first instance with the functions of the generative organs, especially with pregnancy, childbed and its results. These form the principal source of many troubles but rarely that of any benefit to health which accrue to the wife from the married state.

Influence of pregnancy and puerperium.—If we follow the course of the digestive tract from the mouth down to the anus we find everywhere the influences of the generation-processes marked out sometimes lightly and sometimes strongly, sometimes temporarily and sometimes permanently. And it is not only the digestive canal proper, but also its adnexa, and above all the liver which are affected. We should really have to give here the pathology of pregnancy and child-bed, did we wish to include a detailed description of all the conditions which present themselves in this connection—and this, we do not consider, that we are called upon to do. We cannot however omit a brief examination of them.

The mouth.—Beginning with the oral cavity we have to mention first of all one of the most frequent of its affections which occur during pregnancy, namely toothache, and its frequent companion, carious disease and destruction of the teeth, which however appear sometimes without toothache and which

lead in time to the loss of the teeth. Hence the well-known saying, that each child costs its mother at least one tooth. Associated with this are inflammatory processes at the gums (gingivitis, hypertrophia gingivarum) and hæmorrhage from the same; and a fairly frequent occurrence is also a general hyperæmia of the buccal mucous membrane which manifests itself by redness, swelling and a tendency to hæmorrhages. As to the cause of these conditions we cannot say anything definite. Like in so many other disturbances which we come across, some authors assume a reflex process emanating from the uterus, an explanation by which, as *Kehrer* rightly says we only hide insufficiently our ignorance of the internal physiological processes, whilst others see a direct cause in the altered reaction of the saliva during the time of pregnancy. An observation by *Galippe*,¹ so far not supported by others, has shown that the saliva of pregnant women becomes acid in reaction, loses its quantity of ptyalin, and favours for these reasons perhaps the development of micro-organisms which act destructively on the teeth. Others, again, believe that the maternal organism is called upon to supply calcium salts out of bones and teeth for the benefit of the fœtal skeleton,² in which case it is rather surprising that the teeth should be attacked in the first instance, and so severely, too, whilst the other bones—if we do not take into account the rare cases of osteomalacia—remain quite unaffected. This would also not explain how it is that as a rule only such teeth are attacked which were already diseased previous to the pregnancy, and why women with sound teeth which they are in the habit of keeping scrupulously clean escape as a rule altogether. And though we can understand the reason of the toothache as a symptom of dental caries which has reached to the pulp, how about the local hyperæmia, and how can we explain the vomiting of pregnancy which we shall consider later on? With regard to these and other phenomena, there really remains nothing for the present but to admit a

¹*Galippe*, Influence of the Sex on the Resistance of the Teeth. *Gaz. d. Hôpit.* 1885. No. 17.

²*Kirk*, Dental caries in pregnancy. *Philad. Med. Times*, 1880, March 27,

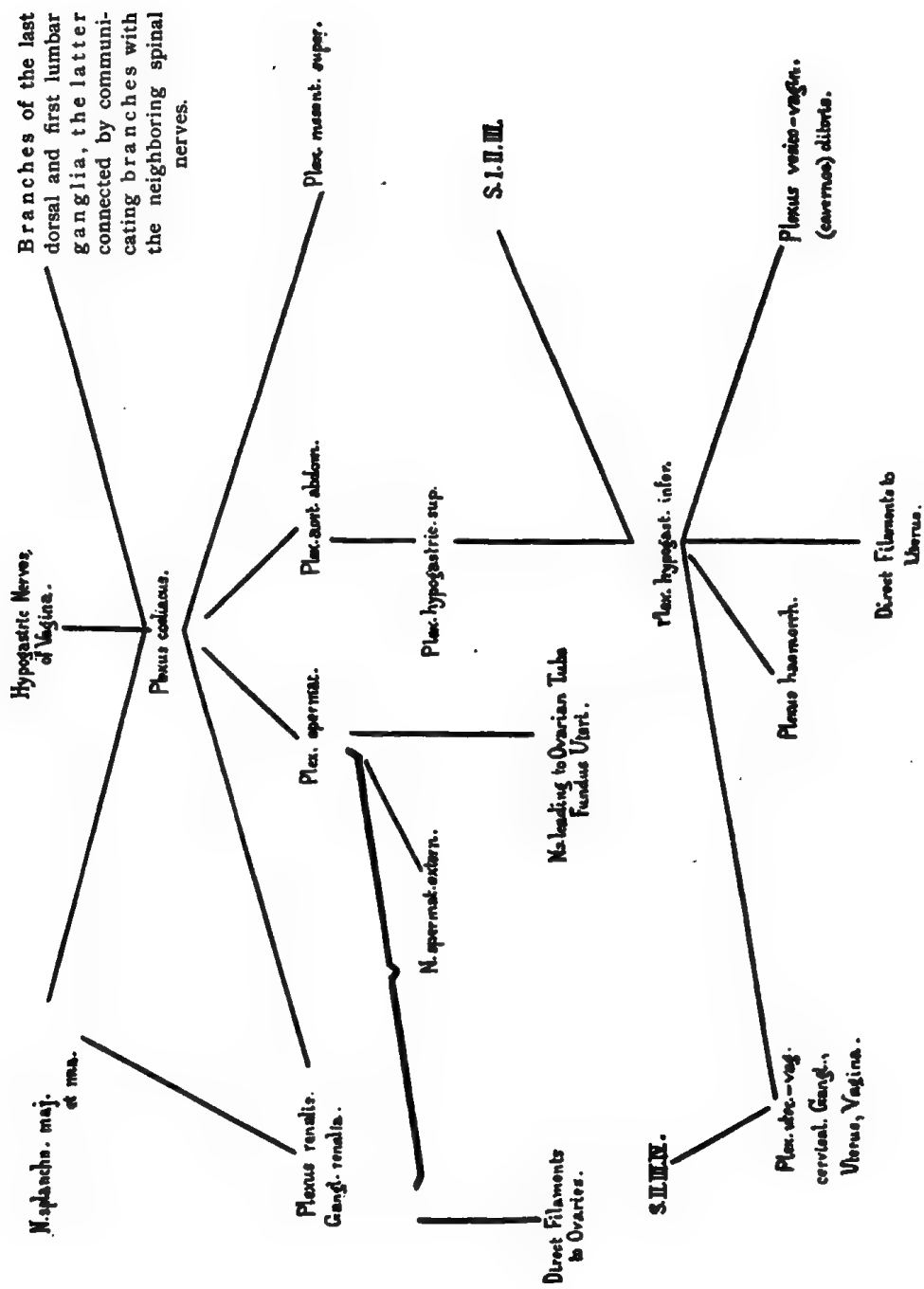
reflex action, notwithstanding the taunt of *Kèhrer*, the justice of which we must recognise.

It may however be perhaps of some interest and helpful in understanding the rationale of these reflexes if we reproduce here a diagram by *Eisenhardt*¹ of the nerve-branches in the abdominal cavity, which shows at a glance the course of the nerves proceeding from the genital organs.

Ptyalism.—Among the reflex neuroses is also included ptyalism, or salivation, which comes principally from the sub-maxillary glands, but also from the parotid. The secreted saliva attains sometimes enormous quantities and may amount to as much as 2 litres in the 24 hours. It is said that this saliva does not contain either ptyalin or sodium salts. As to ptyalin I am in a position to affirm the contrary. I have years ago made numerous experiments on the ferment of the saliva and occasionally in married women as well, but strange to say I have never known it to be absent, not even in acute inflammatory conditions of the buccal cavity.

As long as there is nothing more than ordinary salivation, we have before us a disagreeable but by no means dangerous complication which appears principally in the first months of pregnancy. But when the secretion assumes great proportions the swallowed saliva produces occasionally vomiting and the salivation may become so intense that the saliva runs from the mouth in streams night and day incessantly, and nutrition suffers considerably. Cases are known where the condition has led to extreme prostration or even death. Under such circumstances it becomes imperative to institute artificial abortion, especially as the ordinary remedies generally adopted, such as *duboisine*, *atropine*, *potassium iodide*, *pilocarpine*, are as a rule ineffectual. That the conditions are probably reflex in origin may be inferred from the circumstance that *Lwoff* was able to obtain a rapid cure through the cauterisation of an erosion in the cervix uteri, and *Audibert* one through the reposition of a retroflexed uterus. Some authors also regard ptyalism as a

¹*Eisenhardt*, Die Wechselbeziehungen zwischen internen und gynäkolog. Erkrankungen. Stuttgart. 1895.



premonitory sign of threatened eclampsia but *Fellner*¹ has been unable to find among numerous cases of the latter disease one single case of ptyalism.

There remain yet to be mentioned *aphthous stomatitis* and *glossitis* which are occasionally noticed during pregnancy and lactation.

It might be possible, as *H. W. Freund*² thinks, to explain all these cases simply by assuming that the secretion of certain substances from the ovaries into the blood excites the salivary glands to special activity. The physiological salivation during sexual excitement would seem to support this theory. An infection of the parotis through virulent bacteria is, on the other hand, to be assumed in those rare cases, in which an abscess of the parotis has been observed in connection with puerperal infection, which was, strange to say, confined to the parotis. (*Löhlein, Curé*).

Vomiting in pregnancy.—Connected with this subject is the vomiting in pregnancy which, if it occurs in excess, is designated as hyperemesis. We find this condition in about 50% of all cases. Primiparae and women in the first 3 months of their pregnancy are most frequently affected. About half the number vomit in the morning only. The process always takes place easily and without any special warning, the food previously taken is evacuated and a good appetite is soon afterwards re-established. In other cases however vomiting occurs also on an empty stomach. Pain is felt in the epigastrium, there is a disinclination against food of any kind, unquenchable thirst, and a dry tongue. In such cases there may result extreme emaciation, an anæmic condition and severe psychical apathy. The extremities are cold, the pulse small, the face appears haggard, and the whole condition makes a most alarming impression. The more so since in many cases treatment seems to be

¹*O. O. Fellner*, Die Beziehungen innerer Krankheiten zu Schwangerschaft, Geburt und Wochenbett. Wien 1903 p. 106 ff.

²*H. W. Freund*, Die Beziehungen der weiblichen Geschlechtsorgane in ihren physiolog. und patholog. Veränderungen zu anderen Organen. In Lubarsch u. Ostertag, Ergebnisse der allgem. Pathologie u. patholog. Anatomie. 3. Jahrg. Wiesbaden 1889. Here and in *Fellner's* work, l. c. numerous literature is quoted.

altogether useless. The usual sedatives, such as bromide of potassium, chloral, cocaine, morphia, administered internally or hypodermically, belladonna, asafœtida—the favourite of an old generation of medical practitioners—sucking of ice-pellets, and the blandest possible diet, lavage of the stomach, electricity and other numerous remedies are in severe cases absolutely no good. Nor has local treatment as applied by gynæcologists in the form of correction of uterine displacements, dilatation of the cervix, and similar other measures more than a very uncertain beneficial result—in most cases none at all.

In two cases which I saw and to which I was called in consultation in the 6th and 7th month of the pregnancy respectively, we succeeded by absolute deprivation of food by the mouth and by rectal feeding which was continued for 5 days to effect a cure. But whether we have in such cases to deal with a genuine reflex neurosis, as most authors suppose, or possibly with hysteria which is according to *Kaltenbach* very often the cause of the hyperemesis, must remain rather doubtful. With certainty we can say that excessive vomiting may be the result of other factors as well, f. i. diseases of the intestines, kidney, liver, peritoneum, etc., palpable changes in the uterus or finally some gastric affection which has nothing to do with the pregnancy, such as dilatation, carcinoma and so forth. Very doubtful is however the opinion expressed by *Condamin*¹ that the vomiting is the effect of a general intoxication. He treats it accordingly with subcutaneous or rectal injections of an artificial serum (?) with the stomach absolutely at rest. Whether this last element, namely the rest, is in view of my above-mentioned two cases the principal part of the treatment, is at least open to discussion and not impossible.

The most radical and only remedy is therefore the disburdening of the uterus of its contents, the embryo. Where abortion or premature labour is instituted on account of the severity of the above-discussed symptoms, it is well known that in numerous cases an improvement takes place immediately, or that the vomiting ceases altogether, and the patients make an

¹ *Condamin*. Note sur un nouveau traitement des vomissements incoercibles de la grossesse. Gazette d. Hôpit. 1892. p. 161.

extraordinarily rapid recovery. This happens also where the pregnancy can be allowed to proceed uninterruptedly to its natural end, and it is often astonishing to see with what rapidity extremely emaciated women regain their normal health. For this reason it is extremely difficult to fix the period when under such circumstances the pregnancy should be interrupted. The more so, as, strange to say, the child does not suffer in the least by the great weakness of the mother, and as most extreme exhaustion or even the death of the pregnant woman is more likely to be the result than spontaneous abortion. Moreover, we must not forget that the interruption of the pregnancy in debilitated women presents new dangers, for according to a tabulation by *Cohnstein*, out of 200 cases treated by the induction of premature labour, only 40% showed immediate cure, and 18% no improvement at all. In 4% the vomiting grew worse, and 12% ended with death. At any rate, we see that hyperemesis is under all circumstances a most serious complication of pregnancy.

Vomiting may occur also during parturition; and some authors suppose this to be due to a direct and often-repeated perturbation of the stomach caused by the rising of the uterus during labour-pains. This seems to me highly doubtful, especially in view of the frequent succussions to which the stomach is subject in certain occupations, games, etc. I am more inclined to attach some importance to the general contraction of the abdominal muscles which accompanies labour pains.

Hæmatemesis has also been observed, though only very rarely. *Fellner*¹ has seen it occur in only 22 cases out of 3800 births. The cause lies probably oftenest in so-called erosions or ulcerations of the gastric mucous membrane. That severe vomiting may give rise to such injuries is by no means impossible, considering the intense violence exerted upon the gastric walls. Thus *A. Freund* has communicated to me a case not hitherto published which he has observed in a primipara 18 years old whose debility was extreme in consequence of hyperemesis. The patient died from exhaustion before it was

¹O. O. *Fellner*, l. c.

possible to institute premature labour. The post-mortem examination revealed a fairly recent ulcer of the stomach covered with a sanguineous scab and extending deeply as far as the sub-mucous-coat. The patient had when alive shown nothing more than streaks of blood in the vomit, and never vomited any large quantity of blood. How far the pregnancy *per se* exerts any causal influence on such hæmorrhages, must be left an open question; I am not aware that they ever occur during parturition.

Perforation of gastric ulcers.—*A. Freund* has seen two cases of perforation of gastric ulcers into the peritoneum, which came on quite unexpectedly and without any warning, during the first months of pregnancy. In the one case the contents of the stomach had sunk in the peritoneal cavity as low down as Douglas's pouch, so that the condition was mistaken for a hæmatoma and an operation was about to be performed. The patient died however, and the real state of affairs became apparent at the autopsy. In these cases also the causal relationship must remain doubtful. It was however unmistakable in one case which I have seen and which is fully reported in my "Klinik der Magenkrankheiten." It was the case of a lady belonging to the better classes who took for the purpose of procuring abortion several wine-glassfuls of a hot concoction made of red wine, chamomile, thuja occidentalis and other herbs, injecting afterwards into the vagina a hot mixture of soap and water. She felt unwell the whole day, could not eat anything, wanted to get up in the night and was seized with violent vomiting of blood accompanied by syncope. The cause was at the time attributed to an ulcer of the stomach, but the subsequent event and the lady's confession brought the true explanation.

Ashton reports the following case: On the 5th day after a labour completed by craniotomy profuse hæmatemesis set in, which ended fatally. The necropsy showed two ulcers in the stomach the base of which contained eroded blood-vessels. It was a case of embolism the origin of which lay in a septic affection of the genitals.

Gastritis phlegmonosa.—Puerperal fever is also said to lead sometimes to a metastatic inflammation of the walls

of the stomach (gastritis phlegmonosa) which may result in abscess (*Dietrich*).¹

Dyspeptic phenomena.—The abnormal desires of pregnant women which manifest themselves by a longing for sour, spicy articles of food, by a ravenous appetite for chalk and similar things, are too well-known to require more than passing notice; nor is it necessary to dwell at any great length on the simple dyspeptic disturbances, want of appetite amounting to a disgust at the sight of food, eructations, heart-burning, etc.² In so far as they are not caused by direct local injuries, we might classify these disorders among the reflex neuroses. Here also the above-mentioned reflex tracts are accused by several authors. *Tuszkai* sees the abdominal centres for the internal organs in the solar ganglion or the inferior hypogastric plexus respectively, which goes to the uterus on the one part, and on the other to the anterior and posterior gastric branches of the vagus.

It is certain however that pregnancy conduces also by purely mechanical agencies to disturbances in the gastric functions. Through the relaxation of the ligaments by which the abdominal organs, principally liver, kidneys and stomach, are attached there occurs in all those cases in which a return to normal conditions does not take place after parturition mainly in consequence of insufficient hygiene in child-bed, or where atrophy and flabbiness of the abdominal muscles have resulted from repeated pregnancies—there occurs in these cases a prolapse of the organs, and conditions develop which are known by the name of *Splanchnoptosis*, and which we designate according to the organ chiefly affected, as gastropptosis, hepatoptosis, enteroptosis, splenoptosis, or nephroptosis. The clinical picture arising in consequence, supplies a mixture of functional (nervous) and organic disorders which is difficult to disentangle, and

¹C. A. Ewald. Klinik der Magenkrankh. 3d edit. p. 417.

²In *Sänger's* and *v. Herff's* "Encyclopadie der Geburtshilfe," Leipzig, 1900, there is a pertinent computation in percentages of the individual articles of food; thus, for instance, the longing for sour things has been observed in 34.5 per cent. of the cases, for sweet things in 5.4 per cent., for food and fruit in 1.8 per cent. This tabulation cannot, however, be said to possess much practical value.

which we cannot attempt to discuss here in detail, as it would take us too far. It is well known that we can obtain the best results in the treatment of these affections by the mechanical appliance of suitable bandages or by operative fixation of the displaced organ, if we at the same time institute a generally strengthening hygienic-dietetic regimen directed against the neuroses.¹

Meanwhile we have somewhat deviated by these remarks from our immediate subject, namely the injuries which happen to women during pregnancy and parturition.

Gastric and intestinal catarrh.—Returning to it again, we come across pregnancies which are seriously endangered by the presence of acute gastro-intestinal catarrhs, and which lead to severe vomiting and diarrhœa. The loss of strength is so great, that a suspicion of tuberculosis of the intestines or of some other malignant disease arises, especially if convulsions and eclamptic attacks accompany the condition. *White* reports the case of a primipara who had overloaded her stomach and acquired a violent indigestion shortly before the beginning of the labour-pains. At the end of the expulsion-stage the pulse-rate fell from 80 to 48 beats. Headache and soon afterwards convulsions made their appearance. After severe vomiting, she was well again.

Hither belong also those acute inflammatory and partly diphtheritic processes of the intestinal mucous membrane, which are communicated in puerperal infections from the genitals to the lower portion of the bowels.

Chronic catarrhs of the small and large intestine are capable of determining prematurely by miscarriage a developing pregnancy. That simultaneously existing malignant new growths can influence pregnancy most unfavourably, and namely in part through the injury to the general metabolism and in part by mechanical action is self-evident. This applies particularly to cancer of the rectum which may by its extent and by encroaching upon neighbouring parts become a severe obstacle in labour.

Laceration of the intestines.—Spontaneous laceration of the bowels and of the omentum, strange as it may seem,

¹*L. Landau, Wanklerleber und Hängebauch, Berlin, 1885.*

has been several times observed during parturition. (*Stumpf, Schneider, Schäfer, L. Meissner.*)¹ In one case there had previously been peritonitis present which had given rise to adhesions between the bowels and the anterior abdominal wall. The small intestine was torn in two places. In the other cases the cause of the lacerations in the cæcum and colon remained unexplained.

It is not however pregnancy and the labour act only which favour the production of gastric and intestinal disorders. The lying-in period as well can do so. The sudden dislocation of the stomach which was before parturition compressed and pushed upwards, the rest in bed, the paresis of the intestinal tract during the puerperium predispose to disorders of digestion and to gastric and intestinal catarrhs. They are more apt to cause pyrexia than is coprostasis and are capable of producing extreme prostration.

Constipation.—Here we have to mention in the first instance persistent constipation which frequently attains most extreme degrees so that the poor women have already tried in vain the whole pharmacopœia of internal and external remedies and all the appliances of the "physico-dietetic" method of treatment by the time they come to us with their complaints!

As a consequence of chronic constipation during pregnancy and child-bed *Edleffsen*² has described an inflammation which extends round the sigmoid flexure, in other words, a perisigmoiditis or pericolitis.

For these constipations the pressure of the growing uterus upon the bowel has been made responsible, but surely without reason, or, at any rate, with very little and only temporary justification. Because the constipation begins in many women at the commencement of the pregnancy when the above-mentioned cause is as yet unavailable, and it persists or appears even afresh after parturition when there is equally no longer any question of pressure. The probability is that the cause lies in an atony of the intestinal muscular walls which is partly nervous in origin and partly occasioned by the complex of the above-named injurious influences.

¹Compare with *C. A. Ewald, Klinik d. Magenkrank.* 3d edit. p. 177.

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It is clear that the labour-act as such must be capable of causing on account of the spasmodic contractions during the pains the perforation of encapsuled exudations.

As a matter of fact, however, the perforation takes place generally in the lying-in period, after an interval of some days during which the symptoms have somewhat abated. *König*¹ tries to explain the circumstance that the perforation happens later and not during the parturition stage, by supposing that the shrinking uterus pulls so to speak at the walls of a perityphlitic abscess and damages it so much that a spontaneous rupture occurs. On the other hand *Fellner* ascribes to the uterus prior to parturition a direct protective capacity inasmuch as it forms a reinforcement of the neighbouring abscess-wall. In fact purulent perforation of the uterine wall has occasionally been noticed, as f. i. in a case mentioned by *König*.

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In conclusion it is scarcely necessary to mention that all other possible acute diseases of the intestine may supervene in the course of pregnancy. The effect of the latter upon these diseases is a very variable one. Frequently it contributes to an aggravation of their course and oftentimes again it seems to exercise no particular influence. I have repeatedly seen miscarriages occur in the course of enteric fever, while the fever

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As a continuation of the above-described inflammatory and purulent processes which affect the appendix and the cæcum, I may mention, to begin with, that *W. A. Freund* has described under the name of parametritis chronica atrophicans, retracting inflammatory processes which may cause in addition to other adhesions with neighbouring parts and their consequent displacement, a dragging downwards of the cæcum and appendix, a shortening of the mesentery of the latter, and therefore permanent disturbances. It is not always easy under such circumstances to find out the real state of things, and a most careful and discriminating examination is necessary in order to establish the part played by the appendix in these often vague complaints of the patients. Such cases belong to the group of diseases which I described some time ago as appendicitis larvata. It is clear that, apart from the deformities which they produce in the uterus itself if they extend lower down, or respectively backwards, upwards, to the right or to the left and if they give rise to adhesions, such inflammatory conditions and infiltrations are capable of causing not only permanent disturbances in the functions of the bowel, but also acute attacks resembling obstruction or even genuine intestinal obstruction.

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ous obstructions during pregnancy or during the development of tumours with elevation of the uterus."¹

It is sufficient for our purpose to have pointed out these conditions. In chronic cases or after the cessation of the acute inflammatory process there may supervene sub-paralytic conditions, meteorism, congestions in the lower abdomen, hæmorrhoids, varicose veins, and, as we hardly need mention, more or less obstinate constipation, which constitutes a source of constant complaint.

These troubles may, as we can easily imagine, be temporarily relieved by a fresh pregnancy, as the conditions in the abdominal cavity become considerably altered in consequence, approaching more nearly those which existed previous to the commencement of the injuries in question. On the other hand, the influence of pregnancy and parturition upon an intercurrent peritonitis is decidedly unfavourable. At least half the number of patients die.

Hæmorrhoids. Prolapse of rectum.—Among this selection of disagreeable incidents hæmorrhoids deserve special mention. They constitute along with chronic constipation quite a prominent portion of the complaints occasioned by pregnancy and child-birth. They partly begin in the course of these processes and partly they undergo an aggravation while these processes exist. Thus hæmorrhoids situated high up may be expelled from the anus by the labour act, and may subsequently during the lying-in period produce with the retraction of the anus a strangulation with all its consequences. Ruptures and serious hæmorrhages, inflammatory swelling of the nodes accompanied by severe pain, and occasionally gangrene may supervene. In other cases the nodes appear during pregnancy or child-bed in consequence of the congestion in the abdominal circulation and of the constipation. Hither belong also the prolapsus recti and—in rare cases—the rectocele vaginalis, caused by the relaxation of the vaginal wall, conditions which may on account of the fæcal accumulation in the pouch prove occasionally an obstacle to labour.

¹W. A. Freund, Zur Anatomie, Physiologie u. Pathol. d. Douglastasche. Hegar's Beitr. Vol. II, No. 3, p. 337.

2. *Diseases of the pancreas, liver and spleen.*

Pancreas and pregnancy.—The relations between the pancreas and pregnancy are of an extremely uncertain nature.

With regard to the often-quoted case of *Haidlen*¹ in support of an acute primary pancreatitis—death of a parturient woman in the 6th week of the puerperium, no pronounced peritonitis, enlarged pancreas which was transformed into a brown-red mass suffused with blood—I am inclined to more than doubt its connection with the pregnancy or the puerperium and to regard an accidental complication as by no means impossible.

As to the secondary acute purulent inflammations of the pancreas, *Oser*² says in his well-known monograph that it is possible for metastatic abscesses to form in the pancreas in the course of pyæmia and puerperal fever, but that such cases are very rare. In the post-mortem reports of the General Hospital of Vienna for the years 1888-1898 there is not a single pertinent case.

Though we can say this much with respect to the acute diseases we are entirely in the dark in so far as the relations between the chronic inflammatory processes or new growths in the pancreas and the married state or pregnancy, etc., are concerned. That a tumour or cyst of the pancreas is occasionally met with in a pregnant woman does not prove any internal connection between the two processes.

Diseases of the liver.—The diseases of the liver have always attracted the special attention of medical men, because they lead to the most apparent and sometimes gravest changes in those organs which are not immediately connected with the generative organs proper.

Jaundice.—Not infrequently we observe in the first month of pregnancy slight jaundice which we cannot explain differently than that it is caused by a gastro-duodenal catarrh, such

¹*Haidlen*, Acute Pankreatitis im Wochenbett. Centralblatt f. Gynäkol. 1884, No. 39.

²*L. Oser*, Die Erkrank. der Pankreas. Vienna 1878, p. 161.

as we often come across. Whether this form of jaundice has any causal connection with the pregnancy must be left undecided. Should it occur during the lying-in period or later, it is possible for the bile-acids to pass into the milk, but according to *Frank*¹ not in such quantities as to do any harm to the child.

In very rare cases, however, jaundice seems to develop from an accidental and occasional occurrence into a complication recurring regularly with each subsequent pregnancy of multiparous women. *Brauer*² and *Meinhold*³ have described as hæmoglobinuria of pregnancy a clinical picture in which the two respective women exhibited at each succeeding pregnancy during the last months, lassitude, nervous irritability, pruritus, and slight jaundice as symptoms of an hæmoglobinuria.

*Brauer*⁴ has observed a further case of jaundice recurring with each pregnancy, but without hæmoglobinuria. There are a few other cases (3) in literature of the same nature. This phenomenon is said to occur frequently in Italy in the case of pregnant women suffering from malaria (*Bossi*). It is probable that the cause lies in an hæmatogenous jaundice produced by blood-poisons. (See below.) All these cases ran a benign and mild course.

Acute yellow atrophy of the liver.—Things are however totally different as regards the severe, acutely supervening and mostly fatal cases of jaundice which appear in the middle or the second half of pregnancy (icterus gravidarum gravis; puerperal acute yellow atrophy of liver). The disease begins generally with a rigor, the liver and spleen become swollen, there is severe jaundice, pains in the region of the liver which take a colicky character, hæmatemesis and melæna, eventually meteoritic distension of the abdomen. In the further

¹*F. Frank*, Untersuchungen über die Frauenmilch bei Icterus. Diss. Gießen.

²*L. Brauer*, Ueber Graviditätshämoglobinurie. Münchener med. Wochenschr. 1902. Nr. 20.

³*Meinhold*, Ein weiterer Fall von Schwangerschaftshämoglobinurie. Ibid. 1903. Nr. 4.

⁴*L. Brauer*, Ueber Graviditätsicterus. Centralb. f. Gynäkologie. 1903. Nr. 26.

course of the malady the liver grows very rapidly in volume, it becomes flabby and falls backwards so that it is covered by intestine and the liver dulness disappears.

The urine contains besides bile-pigments, also urobilin and bile-acids, and likewise albumen. Similarly leucine and tyrosine have been found present, but they are not by any means essential attributes. The disease ends fatally in the great majority of cases. Red and yellow atrophic regions alternate in the diminished liver, which presents a flabby, leathery constitution. In the yellow parts there are remains of liver-tissue, the cells of which are in a high degree of fatty degeneration, whilst the red parts consist almost entirely of connective tissue in which appear typical interlobular bile-duct excrescences. The other parenchymatous organs, especially the kidneys show equally a more or less advanced fatty degeneration. Hæmorrhages into the serous membranes are not infrequent, as are not also bloody contents in the stomach and intestines.

The whole clinical picture which I have reproduced here in brief in order to show its septic character is undoubtedly based upon a severe infection, the starting-point of which is either the gastro-intestinal canal or the genital tract, the infection proceeding either directly from the latter or because pregnancy creates a special predisposition to the disease. That we have here nothing more than an aggravated catarrhal jaundice as *Schröder* and *Lomer* maintained, and as *Fellner* also seems inclined to admit, is altogether out of the question, although solitary cases do occasionally recover in which a doubt may arise as to whether they were severe forms of catarrhal jaundice, etc. or light forms of acute yellow atrophy. Whether we take the cause to be peculiar metabolic processes during pregnancy and the formation of so-called placental toxins (*Syncytolysin*, *Veit*) or a bacterial infection, is in view of the absence of all evidence on the point quite immaterial.

The typical cases, however, bear during the entire course of the illness such unmistakable marks of infectiousness that we cannot be much in doubt though we are as yet without proof of the existence of a specific infectious virus. It is true that *Ströbl* has demonstrated the presence of the bacterium coli

commune, and *Richard Freund*¹ that of a staphylococcus, but considering the ubiquity of these microbes, this is not of much value. On the other hand, it must not be overlooked that in consequence of pregnancy conditions are undoubtedly created which occasion changes in the circulation of the liver, and especially a slowness in the secretion of bile, swelling of the mucous membranes of the bile-ducts and of the papilla duodenalis, changes by which the entrance of microbes into the liver is facilitated. The intoxication of the blood by the admission of bile-acids and other toxins which we designate as cholæmia, favours the deleterious course of the disease. Happily acute yellow atrophy is very rare; according to *Spaeth* it occurs once in 16,000, and according to *Douglas* once in 28,000 cases!

Acute yellow atrophy of the liver appears occasionally in an epidemic form without any direct connection with pregnancy, but then it would seem as if pregnant women are particularly liable to be attacked. *Charpentier* saw during an epidemic in the neighbourhood of *Roubaix* 11 pregnant women succumb to icterus gravis, and similar numbers are reported with respect to other epidemics. Whereas some writers have seen a more favourable course of the disease after the supervention of premature labour, others deny such an influence and recommend an expectant attitude since parturition does not affect the illness in any way.

Abscess of liver, fatty liver, cirrhosis of liver.

—There are also other secondary affections of the liver which may be traced directly to a puerperal infection, in contrast to the disease just mentioned in which the affection of the liver occupies the primary place of the clinical picture. Among them are abscesses of the liver, and acute fatty degenerations of the hepatic parenchyma with atrophy of the latter. Where these conditions become healed up, it is possible for connective-tissue

¹*R. Freund*, Ueber den Ausgang der akuten Leberatrophie in Cirrhose. Diss. Freiburg 1897.

Translator's note: In the *British Medical Journal* of May 2, 1896, I mentioned a very interesting case of acute yellow atrophy in connection with pregnancy, the most striking feature of which was that the disease was cured by a supervening attack of erysipelas.

proliferation to form which gives to the disease the appearance of a cirrhosis. To this group of diseases probably belongs also a fatty degeneration of the liver, kidneys and heart-muscle observed by *C. Hecker* and *Buhl* and by *Klebs*.¹ In the cases described the illness commenced during pregnancy with symptoms of an affection of the kidneys or of the heart, became graver at parturition and ended fatally during the lying-in period. Pyrexia may be absent altogether. Death may occur among signs of severe collapse or cholæmia. In the liver were found hæmorrhagic deposits arranged in groups, pronounced fattiness of the liver-cells, thrombi in the portal-vein branches which consisted of blood-platelets and degenerated or unchanged liver-cells. The causes are unknown, in any case there was no demonstrable local affection of the genitals.

We have also yet to mention hæmorrhages from the genital organs, or better said from the uterus, and from the hæmorrhoidal veins, which may take place during pregnancy co-existing with a simultaneous cirrhosis of the liver. They are characterised by the peculiar quality that they cannot be arrested by the ordinary means, and that they resemble more the œsophageal hæmorrhages which are known to us as complications of cirrhosis of the liver. The reason is that the veins belonging to the uterus and vagina terminate in the middle and superior hæmorrhoidal veins, which in their turn form together with the colic veins the inferior mesenteric vein, which again terminates in the splenic vein, a branch of the portal vein. Every congestion in the portal system, that is, every obstacle which the flow of the portal-vein blood meets within the liver reacts on these veins, the more so as pregnancy alone causes to begin with congestive conditions in the abdomen. The result is a dilatation and rupture of the minute and delicate blood-vessels, and the above-mentioned hæmorrhages.

Gall Stones.—Pregnancy has always been looked upon as a predisposing factor in the origin of gall-stones. Statistics show that in a considerable number of cases the first symptoms

¹*Klebs*, Multiple Leberzellenthrombose. ein Beitrag zur Entstehung schwerer Krankheitszustände in der Gravidität. *Ziegler's Beiträge* Bd. 3 Heft 1.

of the illness appeared during or immediately after child-bed. Thus Cyr found among 51 cases of gall-stones 22 with such a history. *Naunyn*, *Huchard* and others express a similar opinion. *Naunyn* says that of 115 cadavers of adult women, containing gall-stones, only 10 had not gone through any pregnancies. It is evident that the above-mentioned influences of pregnancy on the circulation in the liver favour the formation of gall-stones; the same thing applies to the displacements of the liver which appear as consequences of parturition. That the calculi become mobile during pregnancy and during the labour act, that they occasion colics, and that they eventually escape, is nothing remarkable. The direct connection cannot therefore always be demonstrated with certainty.

So as to exhaust completely the list of diseases of the liver there remains only to be mentioned in conclusion that cancer of the liver generally takes during pregnancy a particularly rapid course, that it leads to extreme cachexia of the women and that it accelerates the fatal issue.

Spleen.—The relations of the spleen to the processes which interest us here do not really belong to the chapter on "Diseases of the organs of digestion in relation to marriage," but it is not unadvisable to enumerate them briefly on this occasion. There are only two or three changed conditions affecting this organ. They are: the enlargement of the spleen which is one of the symptoms of a general septic infection, and the rupture of the capsule or of the spleen itself with consequent hæmorrhage into the abdominal cavity, which has been several times observed in connection with pregnancy and parturition. According to *I. Y. Simpson* the soft consistence of the spleen is likely to predispose to rupture of the capsule, a supposition with which we cannot agree, because the capsule is firmer and tenser than the soft pulp, and because the reported cases have shown an acute rupture and not a previous disease of the spleen which might have predisposed to a friability of the organ. Neither was the cause of the rupture clear in the frequently quoted case of *P. Müller*—death from ruptured aneurysm of the splenic artery 3 hours after parturition.

That the spleen, like the kidneys, etc. may become loose in

its ligamentous apparatus and acquire an abnormal mobility which permits it to take up a position in the diaphragmatic excavation more or less distant from its normal situation, in other words that the organ may become a so-called "wandering spleen"—is a subject belonging to the above-considered chapter dealing with the prolapse of the abdominal organs, and only requires here passing notice.

Favourable Influence of Marriage, as Regards the Wife.

In attempting now to describe the advantages accruing to the wife from the married state, as against the long and sad list of diseases enumerated in the first part of this chapter, we must admit to our sorrow that there is very little to say. This does not of course mean that the benefit which the wife derives from marriage—with reference to the organs of digestion—is correspondingly small and that the above enumeration of the ills and woes to which she is liable constitutes the regular state of affairs; nor does it mean that marriage is an institution against which we must warn in any case.

The fact is that the above-described conditions are exceptions only—although some of them have almost become the rule—and that the vast majority of women do not fare so badly! How many anæmic, chlorotic, and nervous young girls who were before their marriage subject to all kinds of digestive troubles develop during married life into strong and healthy women with an excellent appetite and perfectly normal functions of all the organs concerned. In fact, even severe constitutional diseases may disappear or not come to development where there is an hereditary predisposition to them, provided of course that the digestive organs do not suffer and that they exercise their functions properly. There is in this connection in *W. A. Freund's* "*Gynaecologische Klinik*"¹ a most interesting and per-

¹*W. A. Freund, Gynaek. Klinik, Strassburg 1885, p. 353.*

haps not sufficiently known example. Considering the importance of the subject I will reproduce the same in the author's own words:

"The wife of a medical friend is descended from a tuberculously predisposed family. Her mother had died when between 30 and 40 years old from pulmonary tuberculosis and likewise her oldest sister after a short sterile married life. She herself was 19 years old when she married, delicate, tall in stature, with narrow chest and troubled with a severe cough. She gave birth at intervals of about 2 years to 5 children each of which she suckled for about 6-9 months. I have seen this lady during all this time growing, if I may say so, stronger and healthier; she developed into a model of robustness, and is at the present day as a matron 50 years of age one of the most handsome women in the neighbourhood where she lives. After the death of the above-mentioned eldest sister the widower proposed marriage to a third sister living under the roof of my friend, her brother-in-law. The girl was alarmingly delicate, had had a cough for many years, and hæmoptysis several times. The apex of the left lung showed signs of consolidation.

"My friend and I had a consultation over the matter and we decided to inform the would-be husband of the real state of affairs and to oppose the marriage strenuously. Fortunately for him and for the girl the gallant and enamoured officer pooh-poohed our warning, and we experienced in the young married woman the same pleasant surprise as in her elder sister. She gave birth in fairly rapid succession to 3 children whom she suckled, and all the while she became steadily stronger and more vigorous so that she is considered to-day one of the healthiest women of her acquaintance. Both sisters, the elder one now in the fifties and the younger one in the forties have survived their husbands who were both in very good health. According to our modern terminology both have so far altered the state of their organism that they no longer offer any suitable soil for the growth of the tubercle-bacillus. For the better understanding of these experiences, it is necessary to add that the first-mentioned wife of my medical friend lost a boy one year old with symptoms of meningitis and her eldest daughter at

the age of 20 from pulmonary tuberculosis about 4 months after her first confinement."

Such experiences would not be possible without the favourable influence which married life can exert on the general state of nutrition, that is, on the metabolic processes of the female organism. We do not refer here to the above-mentioned more or less diseased individuals, but to those delicate and fragile creatures who develop during the married state into robust, resistant and "embonpoint" women. There are plenty of instances though they naturally find no place in gynæcological text-books.

*Influence of Diseases of the Digestive Apparatus on the
Contraction of Marriages.*

The question is to be discussed, finally, whether one of the above-considered diseases of the digestive organs (including the liver and spleen) may form a reason for prohibiting a contemplated marriage or for advising against it. Of course only a portion of these diseases may give rise to such considerations. Because persons with pronounced cancer of the liver or of the stomach, persons afflicted with cancer or manifest tuberculosis of the intestines or who are strongly suspected of being thus afflicted, persons with pernicious anæmia, severe chronic dysentery or similar affections must not only be dissuaded from marrying, but actually and directly forbidden, where this is at all possible.

A great deal certainly depends upon circumstances, and we may well imagine cases where such marriages can take place with the consent of both parties, always provided that neither of them is in the dark as to the true state of things. Regard for the offspring must in such cases also play an important part. Where there is a possibility of children being born to a father or mother suffering from an hereditary disease, marriage is a priori out of the question, at least theoretically,

but in most such diseased conditions there is to begin with a physical incapacity which precludes the possibility of conception. Generally speaking these cases cannot be decided by fixed rules but each one must be considered on its merits and with a full appreciation of all the factors concerned.

It is different as regards the other diseases considered above but they can only interest us in this connection if they were acquired previously to marriage.

That the married state can be nothing but beneficial to the great majority of these conditions we have already mentioned with respect both to men and women, and there remain only a few special cases. The greatest apprehension will probably be caused by a manifest disease of the appendix, a condition which occurs most often just at the age when marriages are commonly entered into. After what we have said above on the influence of pregnancy on the course of appendicitis and vice-versa on the effect which diseases of the appendix exercise upon gestation, we should consider it advisable to recommend if possible the removal of the appendix before the consummation of the marriage, especially in those cases where the appendicitis has been a recurrent one and where the danger of a relapse during married life is therefore particularly great. Whether the patients concerned will, especially in the milder cases, accept this advice is of course another question. This applies to even a greater extent in the case of gall-stones, an affection which is hardly likely ever to assume such serious proportions as to render it an insurmountable obstacle to matrimony. Lighter cases certainly offer no sufficient reason for dissuading from marriage, and in the severer ones the operation spontaneously becomes such a prominent necessity that it is bound to be carried out before the contraction of marriage almost in the natural course of events.

Matters are not much different in ulcer of the stomach. We often see in our consulting-rooms patients who desire to be cured of a manifest *ulcus ventriculi*, or of complaints which suggest more or less forcibly the existence of that affection, in time to get married, if possible on the date fixed beforehand as the wedding-day. That such, and let us add, similar other,

diseases and complaints are no obstacles to marriage is clear. If at all indicated, it is advisable to recommend in such cases a postponement of the marriage, but a long experience has taught me not to expect that this recommendation will be listened to, salutary though it is. The parties concerned prefer to take the risk in the hope, which is indeed often justified, that marriage will bring along with it the necessary care and attention.

XIII

Diseases of the Kidneys in Relation to 'Marriage

XIII

DISEASES OF THE KIDNEYS IN RELATION TO MARRIAGE

By **P. F. Richter, M.D.** (Berlin)

The kidneys occupy a most prominent position among the organs the condition of which is of the highest importance with regard to the contraction of marriage, and which are on the one hand subject to considerable influence from the married state and on the other hand of material import to the married couple as well as to their offspring. To begin with, the close spacial relations existing between the urinary and the genital organs both in the male and female sexes point to the possibility of reciprocal influence between them through the medium of sexual intercourse. Moreover in the female, pregnancy and parturition cause, particularly to the kidneys, an increased amount of work, and there is also no doubt that an organ of such physiological importance as the kidney which makes itself felt over the entire organism even under normal circumstances, must necessarily play an even greater rôle when it is subject to disease.

In considering the reciprocal influences which marriage and renal disease exercise upon one another, it cannot be our object to examine these relations in detail with respect to every single disease of the kidneys. For, apart from the circumstance that such an examination with its inevitable repetitions would prove tiresome, a number of renal diseases are so rare that they hardly deserve to be included in an article intended in the first instance for the general practitioner. It must rather be our aim to single out those groups of diseases which are on the one hand of importance on account of their frequency in general practice,

and on the other so analogous in their manner of influencing the activity of the kidneys that they may be discussed under one head, in spite of their individual differences.

Nephritis.

The medical practitioner who is asked for his opinion whether in the presence of nephritis in one or the other of the parties contemplating marriage—for it is hardly necessary to dwell at any great length upon the fact that it is in the nature of things principally chronic and not acute diseases which will confront us in this connection—such marriage is permissible, must first ask himself upon what factors the diagnosis of nephritis is based, and whether this diagnosis is at all justified. An examination of the urine for albumen simply is in any case not sufficient. Since we know that there is a so-called physiological albuminuria, that is, that under certain circumstances an albuminuria may exist for many years without doing any injury to the general health and without producing any demonstrable anatomical changes, and since it is a fact that those who are subject to this condition may reach the allotted span of life, it would be perfectly unreasonable to condemn an individual to celibacy simply because of this existing albuminuria. It is true that there may be very great difficulty in deciding in individual cases whether the albuminuria is physiological or not, and in view of the enormous importance of the subject and of the great responsibility arising to the physician from an answer in the affirmative we must consider this point somewhat minutely.

Differential diagnosis between nephritis and physiological albuminuria.—The first essential is the principle upon which *Senator* particularly has always insisted, namely that physiological albuminuria cannot and must not be diagnosed from a single examination of the urine or even after a short observation only. Most calamitous mistakes through the confusion of insidious nephritis with intermittent albuminuria and without effect upon the general state of health

as without prominent symptoms are apt to occur if this principle is neglected.

For the avoidance of such mistakes we have a number of guiding factors referring above all to the condition of the urine. It is not either the quantity of urine or the quantity of albumen excreted which comes into consideration, although the latter does so in one particular direction, since very considerable quantities of albumen may be said to exclude with absolute certainty the presence of a physiological albuminuria. A small quantity of albumen on the other hand, say under $0.5^{00}/_{00}$, is not necessarily harmless because we often come across cases of chronic nephritis in which the amount of albumen in the urine continues for years to be so trifling that it can only be detected by the most delicate testing methods.

More important than the amount is the course of the secretion of albumen. Constant albuminurias even if they are of an insignificant nature are probably never reckoned among the physiological ones. The type of the latter is rather the intermittent variety, observed occasionally in chronic nephritis as well, which is particularly characteristic in those cases where definite irritations of the daily life lying within the borders of physiological conditions bring the albuminuria into existence, where with their disappearance the albuminuria also disappears and where in their absence no albuminuria occurs. Among these physiological factors which favour the passage of albumen into the urine in individuals specially predisposed to it, is to be reckoned in the first place fatiguing physical exercise, which is associated with intense muscular activity, sometimes only the standing posture; further, irritations from the sensory sphere such as psychical emotions and mental exertions, and finally cold baths and food rich in albumen.

Where in addition to the albumen the urine contains abnormal constituents, principally leucocytes which do not come from the urinary organs, and casts, even in very minute quantities, the diagnosis of physiological albuminuria is absolutely out of the question. The only exception is formed by the presence of isolated hyaline casts which have occasionally been observed along with the albumen and also without the latter

in the urine of healthy people (Cylindruria). Nevertheless the occurrence of more than a few isolated specimens of this kind will cause the careful physician to be on his guard, and induce him to suspect a different pathological origin even where there are other elements pointing to a physiological albuminuria, and this suspicion will become a certainty if there are also found leucocytes (mostly mono-unclear) or other cellular elements as signs of a renal affection.

The most important point however is the attitude and constitution of the individual concerned. Only in the case of younger people in their best years and in full vigour, without subjective and objective signs of disease, especially of the organs of circulation, is it permissible to regard an albuminuria to which the above remarks apply as a comparatively unimportant symptom. An albuminuria ensuing the other side of the third decade should never be classed as a physiological one, but must always create a suspicion that there is an insidious renal affection present, even though all other symptoms are absent.

Albuminuria of puberty.—If it is therefore necessary for the physician to be careful in the interpretation of albuminuria in the case of somewhat older candidates for marriage and to express an opinion with a certain amount of reservation only, this cautiousness is none the less indicated in those cases where we are in the presence of the so-called albuminuria of puberty which affects younger individuals. As is well-known this is an occurrence which we meet in overgrown and ill-developed persons, mostly chlorotic girls, who exhibit all kinds of symptoms generally associated with chlorosis, such as a pale complexion, a tendency to tire easily, gastric disturbances, headache, etc. Upon examining the urine incidentally albumen is found to be present. This happens as a rule intermittently, especially in connection with the urine passed during the day; the condition grows worse under the influence of the factors enumerated above, particularly the muscular exertions; the albumen is absent in the night-urine and diminishes also in the daytime or disappears even altogether when the patient takes a rest in bed.

Under no circumstances must this kind of albuminuria be regarded as a perfectly harmless one. In the majority of cases it depends probably upon a poor constitution of the blood with light forms of cardiac insufficiency, the heart not being as yet fully equal to the greater demands made upon it on the part of the rapidly growing organism. With the improvement in the anæmia and the gradual increase in the activity of the heart the albuminuria may disappear permanently.

There are however sufficient observations known where the albuminuria of puberty formed the starting-point or rather the first manifestation of an insidious nephritis and where the pronounced complex of symptoms of chronic nephritis developed fully after many years without any other cause.

Just because as already mentioned it is chiefly young girls who exhibit such albuminurias the acquiescence in the contraction of marriage involves in such cases a certain responsibility on the part of the medical attendant. Pregnancy and labour impose such a considerable task on even healthy kidneys, that kidneys whose parenchyma is without doubt on account of deficient circulation and bad nutrition less capable to resist unusual irritation than under normal circumstances appear indeed to be in danger; nor is it by any means impossible for this condition to grow into a genuine nephritis in the course of one or several pregnancies. At any rate the physician will endeavour, before the marriage is consummated, to bring the albuminuria to an end by the employment of the usual therapeutic remedies, such as iron preparations, stimulation of the activity of the heart, and similar other measures. On the other hand it is not necessary in such cases to look upon the situation with too much pessimism but to recollect that frequently where all these remedies fail, marriage acts as a real cure of the chlorosis and consequently of the principal cause of the albuminuria. (See chapter on chlorosis for further details.)

We could do no more on this occasion than point out in brief the factors which help us to decide the question whether in any given case of albuminuria we have before us an undoubted chronic nephritis or a comparatively less serious disturbance in the health of the individual concerned. At any rate it must

be emphasized how difficult the diagnosis may be in any single case and that it can only be arrived at after a most minute consideration of the various circumstances, and after a prolonged period of observation. For this reason there is no one better qualified to express a definite opinion on the point than the family doctor who has known and observed the candidate for marriage perhaps from childhood or at any rate for some time, and who is perfectly familiar with his or her early life, previous diseases, constitution and other such momentous details. It is hardly necessary in view of what has been said above, to enlarge on the importance of this first-hand information. That mistakes are apt to occur in spite of most careful observations is proved by the statistics of physicians to life-insurance offices. Thus *Washbourn* has seen of 39 insured with supposed "physiological albuminuria" only about half the number reach the normal average duration of life. And even *Leube* who has more than anyone else pointed out the comparative frequency of albuminuria in otherwise healthy individuals admits that he has in the course of time become more careful in excluding nephritis in apparently harmless cases of albuminuria. At any rate there will always be cases where the physician consulted will be in a position to assure the person contemplating matrimony that his or her albuminuria is to all appearances of no consequence and that it does not constitute an obstacle to contraction of marriage, although it may act as a warning to be careful about the mode of life to be adopted. This optimistic view of the situation is often thoroughly confirmed by the further course of the individual's married life.

By far the preponderating majority of cases of albuminuria, however, depend upon chronic nephritis, and we have now to consider the influence of marriage upon the course of inflammation of the kidneys, and in this connection to examine carefully into the question whether and under what circumstances the contraction of marriage may be permitted from the medical standpoint in the presence of nephritis in the one or the other party.

It is in the first instance necessary to remember—and this is a point which applies equally to both sexes—that chronic

nephritis *per se*, that is without regard to the married state, shortens materially the duration of life. It is true that we no longer estimate the probable life-duration of nephritic patients with such pessimism as was done by older generations of medical men who frequently did not diagnose the disease until it had reached its final stages. We know that patients with so-called cirrhotic kidney can from the perfectly insidious beginning onwards live and follow their occupations comparatively free from symptoms and complaints for as long as 20 years and more. But opposed to this relatively prolonged and favourable course of the disease with more or less extended intervals of remission we have as the other side of the picture what we may fairly call the absolute incurability of the malady.

The influence of the married state upon the course and duration of the illness does not manifest itself similarly in men and women and it is therefore requisite to consider it separately with respect to each of the two sexes.

Influence of marriage on the chronic nephritis of the husband.—Married life does not appear to possess any elements which act aggravatingly upon the nephritis of the husband. No doubt every physician has not infrequently opportunities to observe in men cases of nephritis which have hitherto remained latent and unrecognised and which assume soon after marriage a rapid character leading to a fatal issue in a comparatively short time. It is certainly possible that this rapid course is rendered still more so in consequence of the reproaches which the patient makes himself, since we know from experience that psychical emotions influence nephritis most injuriously. Generally speaking however it is not the married state as such which is accountable for the aggravation, but external contingent circumstances. Where the struggle for the daily bread makes life harder, where the husband in order to maintain his family has to perform a greater amount of work after his marriage than he did when he was single, the nephritis is sure to find a suitable soil for further and rapid development, especially if there is no possibility for the struggling and afflicted patient to take care of himself or to obtain the proper nursing.

Where the outward circumstances are however favourable, where the necessary comforts of life can easily be obtained, where exacting employment can be avoided, where it is possible to seek in the winter a refuge in suitable southern climates and where similar other luxuries can be indulged in; further, where a regulated mode of life does not offer opportunities for excesses of any kind, and where the nutrition is wholesome and less irritating for the kidneys than the restaurant-food of bachelors generally is—under these circumstances the renal affection is more likely to be influenced beneficially and the married state more likely to prove life-prolonging.

As to the character of the married life, and especially with regard to the gratification of the sexual activity and the possibility of propagation, it is certainly true, that chronic nephritis is in so far injurious as it is reckoned among those diseases which lead in the course of time to a diminution of the virile power. This influence must not however be exaggerated. In the far-advanced stages, when cachexia is well-marked, when all vegetative functions are at a standstill, when the unhappy and exhausted patients are but the shadows of their former selves, complete absence of the sexual desire is the rule. But on the other hand experience tells that during the latent stages which may last for years and even decades and in the course of which the disease manifests itself by traces of albumen only, there is generally no pronounced impotence such as would attract the attention of the patients, and they are capable of doing full justice to their marital obligations. There are certainly exceptions to this rule. *Bartels* as well as *Fürbringer* point out that a "mysterious" diminution of the *facultas coeundi* occurs sometimes at a very early stage of chronic interstitial nephritis.

Influence of marriage on the nephritis of the wife.—Of far greater importance than in men, are the relations between marriage and nephritis in women, since pregnancy and childbirth,—particularly the former—exert a most complicated influence upon the activity of the kidneys and its disturbances. The effect of the married state upon the nephritis of the wife is, to begin with,—and this applies equally to all

the other diseases of the kidneys, of which we shall speak later on—far more lasting and fateful than upon that of the husband. For this reason it is also easy to understand how it is that, whereas casuistic contributions to the subject “marriage and nephritis” in regard to man are very rare and deal at the utmost with a diminution in the virile power, the same question with regard to woman is represented in literature by a considerable number of cases recording the influence of pregnancy, parturition and child-bed upon diseases of the kidneys of which nephritis is by far the most prominent. The most recent comprehensive work dealing with the subject, that of *Fellner*, mentions no less than 740 publications which are more or less connected with this question, though most of these are written more from the point of view of the gynæcologist and obstetrician than from that of the family practitioner. We must to a certain extent agree with *Fellner* when he points to the contradiction that in spite of the voluminous appreciation of the subject in the specialist gynæcological literature most recent contributions on nephritis omit either all reference to the influence of renal diseases in connection with pregnancy and *vice-versâ* that of pregnancy in relation to existing renal disease, or mention it only very briefly.

In discussing this influence—as already mentioned pregnancy occupies in this connection the foremost place whilst labour and child-bed are only of secondary importance—we must keep the two following points apart from one another: 1. Renal disease in association with or as a consequence of pregnancy. 2. Pregnancy in association with previously existing renal disease. It will be our aim to show that we have here two prognostically different conditions which vary also with regard to the dangers which they occasion to the mother and the offspring.

Nephritis of pregnancy.—1. As regards the renal disorders which are dependent on pregnancy as such it is usual to call them by the name of “nephritis of pregnancy.” We understand by the same an affection of the kidneys arising during pregnancy, usually in its latter months, in persons who have never previously suffered from any disturbances in the domain

of the urinary organs. Diagnostically it is not always easy to differentiate the condition from simple congestion, and in going through the literature of the subject one frequently meets cases quoted as nephritis which do not really belong to this classification. The urine is rich in albumen, contains numerous abnormal constituents, casts, leucocytes, fatty renal epithelium; the appearance and concentration of the urine may be variable; sometimes it is pale and copious with a low specific gravity, sometimes especially in consequence of co-existent congestion, of high specific gravity and scanty. In addition, there exist other signs, more or less pronounced, of acute nephritis: œdema, dropsy, not infrequently retinitis, and finally eclampsia.

The origin of the affection is by no means clear; clear is only its relation to pregnancy. But in what manner the latter creates the nephritis—on this point opinion is very much divided. Some authors suppose it is due to a pressure-congestion; some assume a parasitic nephritis. According to *v. Leyden* there is no direct inflammatory process, but only an anæmia of the kidneys with fatty degeneration. *Senator* agrees with those authors who attribute the injury to the kidneys to a retention of poisonous substances in the blood, a toxæmia resulting from deficient renal activity. The causation would therefore lie in an insufficient “detoxication” of the body, and such a condition is in fact more likely to arise during pregnancy than at other times, partly on account of the considerably increased work thrown upon the kidneys, partly in consequence of mechanical pressure and encroachment of space in the abdomen by the pregnant uterus, and partly in consequence of a greater production of toxic substances in the general metabolism of the pregnant woman.

More important than the points of view indicated above with regard to the pathogenesis are for practical reasons the following questions:

- 1) What is the frequency of the condition designated as nephritis of pregnancy?
- 2) Is there in the condition of the kidneys preceding the pregnancy an element which predisposes to nephritis, in other words, can the latter be foretold beforehand or can its super-vention be prevented in any way?

3) Which are the dangers arising to the mother from the nephritis?

4) How can we, as far as is possible, circumvent these dangers?

1) The frequency of nephritis in pregnancy is not a very great one. The different statistics vary somewhat from each other, but nevertheless it does not exceed 10%. Thus *Mynlieff* gives 245 cases "with albuminuria" out of 3536 pregnant women. *Fischer* finds only 7.4%. We mention these two authors as examples merely. From none of the statistics however does it appear definitely whether they always refer to genuine nephritis of pregnancy only, and whether simple cases of congestion are not included.

2) As to predisposing moments which are of importance for the origin of gestation-nephritis we know next to nothing. Most authors endeavour to get over the difficulty by the supposition of a "deterioration" of the kidneys which causes them to respond much more intensively to the retained toxic substances than healthy organs. If, to begin with, there is in addition to this deterioration a certain inefficiency in the excreting capacity, the result is naturally a constantly increasing overloading of the blood with effete material, thus creating a proper vicious circle. These are however so far but mere suppositions without a definite clinical or experimental basis. It ought to be demonstrated in the first instance whether women with "physiological" albuminuria or women exhibiting the higher degrees of renal injury which we have considered under the heading of "albuminuria of puberty" are more apt to suffer from pregnancy-nephritis than other women. As far as I know there are no observations in that direction which might be of assistance to the practitioner in arriving at a decision.

It is nevertheless advisable in such cases to be careful with the prognosis, and if not exactly to oppose the marriage, at least to call attention to a possible complication of pregnancy with nephritis. It will also be the duty of the medical attendant to watch the woman in question most attentively, and to satisfy himself by repeated examinations of the urine as to the state of the kidneys, so as to be able to take immediately the neces-

sary steps and to recommend the necessary conduct as soon as the first symptoms of a disordered renal activity make their appearance.

Transition of pregnancy-nephritis into chronic nephritis.—3) Among the dangers resulting to the mother from the nephritis of pregnancy we have to consider in the first place the question whether a temporary condition existing during the time of pregnancy and disappearing with its conclusion may pass into a permanent renal affection, i. e., a chronic nephritis, and whether such a transition occurs frequently, if it occurs at all?

The answer to these questions varies. According to some authors (*Fehling, Flaischlen, Freyhan, Hahn, Löhlein, Studer*, and others) the danger of such a transition does not exist at all, or else to such an insignificant extent that it is not of any practical importance. In their opinion the nephritis of pregnancy has always a tendency to heal; but sometimes, though rarely, the condition is apt to return with subsequent pregnancies. *Hofmeier* also, contrary to his own former opinion, is now on the side of those who consider the transition into chronic nephritis as at least not proved, and who rightly miss in the statistics which answer the question in the affirmative at the hand of figures, positive evidence that the women concerned were as a matter of fact previously in the possession of perfectly healthy kidneys. For this reason such statistics as that of *Koblanck* who gives 6.5% as the frequency of the occurrence of chronic nephritis after pregnancy-nephritis, are not quite without faults. For they omit to give the state of the patients before their first pregnancy. Besides, hospital material upon which these figures are based is altogether the least suitable for the purpose, seeing that it consists of a class of people who are not in a position to look after themselves very carefully, who do not often undergo medical examination and in whom a chronic nephritis is more likely to be overlooked than among the better classes who are constantly under the medical supervision of their family attendants.

But although numerical evidence as to the frequency with which chronic nephritis develops from the nephritis of preg-

nancy is not obtainable, there can be no doubt as to the possibility of such an occurrence. This is proved by cases reported by *v. Leyden*, *Weinbaum* and *Herrlich*, which were observed in Prof. *v. Leyden's* clinic; further by *Krzyminski*, *Puech*, *Westerode* and others.

Under what circumstances this transition takes place, what factors favour its occurrence, are points which the clinical observations do not show at all clearly; neither can we derive any information from anamnestic data, nor is, as *Koblanck* truly observes, the beginning and duration of the renal trouble at all characteristic so as to be of any help. In spite of a long duration of the albuminuria in pregnancy-nephritis it is possible for chronic nephritis to remain absent; on the other hand it may make its appearance subsequently during a comparatively favourable and harmless course of the former, as has been shown by isolated observations, so that it is never possible to say beforehand with certainty what is going to happen. At any rate even if we cannot at all share the view of those authors who look upon pregnancy-nephritis as a relatively harmless renal disorder which does not leave behind any evil consequences, we can at least derive a certain amount of comfort from the reflection that it but rarely passes into chronic nephritis.

Nor is the danger of a relapse of pregnancy-nephritis during subsequent pregnancies very great. It does happen—such cases have been recorded by *Fehling*, *Flaischlen* and others—that pregnancy-nephritis occurs in one and the same multipara several times without the kidneys showing any abnormal function during the intervals and without, judging at least from observations made hitherto, the development of a chronic renal inflammatory condition. But on the whole the repeated occurrence of pregnancy-nephritis is not frequent. *Fellner* could find among the large material of Prof. *Schauta's* clinic only 4 such cases. As a rule pregnancy-nephritis occurs in the first pregnancy only, and is absent in the subsequent ones, partly in consequence of hypertrophy of the heart becoming more and more established with every pregnancy, partly, as some believe on account of the kidneys getting gradually accustomed to the

toxins forming in the pregnant organism, and partly also because the intra-abdominal crowded condition becomes less and less pronounced with every fresh gestation.

Of serious dangers to the mother must in the first instance be mentioned *eclampsia*; it threatens the life of patients affected with pregnancy-nephritis to a not inconsiderable extent. *Fehling* has computed this to amount to 5%. In addition the premature separation of the placenta has been repeatedly observed in association with a strong tendency to hæmorrhages. As to the dangers arising to the fœtus in consequence of this we shall have something to say later on. Finally, *affections of the retina* are not infrequently an undesirable complication.

The combating of the dangers in pregnancy-nephritis.—4) With regard to the successful combating of the dangers connected with the nephritis of pregnancy, opinion is in so far divided that the question arises whether the interruption of the pregnancy is indicated and particularly at what stage this operation should be undertaken. The majority of authors are of the opinion that we should at first for some time try the ordinary therapeutic treatment of nephritis especially the hygienic-dietetic part of it, and to see whether an improvement can thus be effected. If this is not the case, if the nephritic symptoms get worse, if the œdema and dropsy increase, if dyspnœa, headache, and other nervous phenomena make their appearance, and if the activity of the heart is inefficient, the induction of premature labour becomes fully justified. In the case of the above-mentioned complications, especially in eclampsia, artificial detachment of the placenta, and retinitis albuminurica, the operative interruption of the pregnancy must be effected as soon as possible. In retinitis, because the affections of the retina during pregnancy-nephritis offer the best prognosis, if the pregnancy is quickly determined. A complete restitutio ad integrum is then soonest to be expected. Even where the acuteness of vision is only moderately diminished the immediate induction of premature labour is indicated. (*Silex*.)

It must not however be concealed that more radical views than the above have also been expressed and that they also have their supporters. Thus for instance *Jarret* recommends the

immediate induction of premature labour under all circumstances; he refuses to wait until the 7th month, that is up to the time when the fœtus is viable, on account of the supposed bad prognosis of the child's life and because of the dangers which a prolonged continuation of the albuminuria is likely to cause to the mother. Some German authors also take up the standpoint that the induction of the premature labour without waiting for any length of time is indicated if the pregnancy-nephritis leads already to symptoms in the first half of the pregnancy.

We must of course ask ourselves: Is there any chance of diminishing or removing entirely the dangers threatening the life of the mother, at least in so far as simple uncomplicated nephritis is concerned, by means of this more active interference? For, as regards eclampsia and similar immediately dangerous complications there can be no two opinions. Even authors like *v. Leyden* who incline to the view that the longer albuminuria lasts the more its dangers grow, admit that we have absolutely no criteria by which we can judge whether we may hope for its disappearance after a certain time or on the other hand fear its prolonged continuation. The indications for the premature labour or for the time of its induction are therefore quite uncertain. And just as uncertain is the desired result.

Besides, the interruption of the pregnancy is by no means an absolutely safe procedure. *Kleinwächter* and *Schauta* are right in pointing out that the existing dangers are not immediately removed by the induction of premature labour and that on the contrary greater ones may sometimes be created, seeing that the labour process in itself supplies a fresh complicating factor. "The difference between the point of view of the internal clinician and that of the gynæcologist is that the former devotes special attention to pregnancy in its evil effect upon an existing internal disease, whilst the latter takes into consideration the rock of parturition as well." (*Schauta*.)

The opinion of *Schauta*, expressed in the lecture from which these sentences are extracted, to the effect that "most ailments are overrated in their importance with regard to pregnancy" may

apply perhaps, as can be judged from what has been said above, to nephritis which supervenes in the course of pregnancy, but not to pregnancy associated with a previously existing nephritis. Chronic nephritis with which we desire to deal now is most unfavourably influenced by pregnancy in by far the preponderating number of cases. (*Dickinson, Möricke, Carpentier, v. Leyden, Weinbaum, Mynlieff, Hofmeier, Fehling, and others.*) And it is chiefly two factors which are accountable for this: firstly the circulatory disturbances caused by the pregnancy which throw more work upon the kidneys and influence injuriously the compensation between the heart and the kidneys, and secondly the direct damage to the renal parenchyma produced by chemical noxæ. If, as we have seen while considering the nephritis of pregnancy, the metabolic products formed in the pregnant organism are capable of injuring a healthy kidney or at least one which is in a certain weak condition of equilibrium, how much more likely is it that they will act deleteriously upon one already diseased and inflammatorily altered? As a matter of fact we do not infrequently observe that renal disturbances which have apparently become healed, and latent processes which gave rise to no symptoms, break out afresh during pregnancy and assume an active character: the hitherto slight albuminuria increases in severity; the urine contains a more or less abundant accession of epithelial cells and casts; œdemata appear, the organs of circulation are affected, the general condition becomes worse; in brief the nephritis which had hitherto remained almost unnoticed or at any rate been going on without injuring the health, experiences a rapid exacerbation so that it is capable under symptoms of cardiac debility or of uræmia and eclampsia to lead to a fatal issue at the very first pregnancy.

In the whole course and in the clinical aspect of the chronic nephritis which recrudesces during pregnancy there is a great difference noticeable as against the nephritis of pregnancy. The symptoms do not appear as late as the second half of the pregnancy but frequently much earlier; they can assume an alarming character and quickly cause imminent danger to life. I append here as examples a few instructive cases out of the casuistic literature on the subject.

1. Case of *Mynlieff*: Woman, formerly acute nephritis, cured with the exception of a few remaining symptoms, becomes pregnant. During the pregnancy increase in the hitherto small quantity of albumen in the urine. The latter contains numbers of hyaline casts and epithelial cells. Œdemata. Retinitis albuminurica. Birth of a macerated fœtus. Three months later death.

2. Case of *Löhlem*. (Transition of pregnancy-nephritis into chronic nephritis.) A woman, thirty years of age is taken ill in the 7th month of her 7th pregnancy with nephritic symptoms. Artificial premature labour. Material improvement, but no complete subsidence of the nephritis. One year later fresh pregnancy. In the 5th month uræmic attack. Death.

3. Case of *Pawlinoff*: Woman, 21 years old. At the age of 13 diphtheria with paralysis of the soft palate. Married at 20. In the course of the pregnancy, œdemata, headache, uræmic symptoms, retinitis albuminurica, increase in the quantity of urine, specific gravity 1009, little albumen, few casts. After the birth of a dead child, subsidence of the symptoms, but marked hypertrophy of the heart and increased tension of the blood-vessels. As the appearances in the circulatory apparatus show, this is a case of chronic nephritis which had existed for some time and which has developed gradually and insidiously, probably in connection with the diphtheria gone through in childhood. But the patient has never noticed anything wrong; during the married state only and in consequence of pregnancy the disease assumed a serious character and compensatory disturbances soon made their appearance.

It is not necessary for violent symptoms to show themselves at the very first pregnancy; but even where the latter has taken a favourable course a lasting deterioration in the state of the kidneys does not as a rule remain wanting. Each following pregnancy then increases the dangers and sooner or later the patient is bound to succumb to her nephritis.

A case observed by *v. Leyden* and communicated by *Weinbaum* illustrates very clearly the injurious influence of repeated pregnancies. Three normal labours which presented no disturbing features in a woman with chronic nephritis are succeeded by 5 miscarriages with a constant increase in the renal symptoms from which the patient died during her last pregnancy. *Fellner* reports a case from *Schauta's* clinic of a nephritis in the course of which hemiplegia occurred in the 8th month of the 3d pregnancy. The same occurred again in the 9th month of the 8th pregnancy and led after induction of premature labour to a fatal issue.

The prognosis of nephritis in married women need not necessarily always be such a sad one; the injurious influence of pregnancy upon the disease is sometimes absent. Occasionally we even see during pregnancy, as *Löhlein* points out, an improvement or a complete disappearance of the nephritic symptoms. *Fellner* found among the registers of births of *Schauta's* clinic 29 histories recording nephritic phenomena previous to the respective pregnancies, but none in the course of the latter. It must, however, be admitted that it is not stated whether they refer to simple pregnancy-nephritis or to genuine chronic inflammation of the kidneys.

I myself saw a lady who developed a severe acute nephritis in 1892 in consequence of sepsis and who married in 1895 contrary to medical advice. The urine still contained then moderate quantities of albumen, leucocytes and scanty hyaline casts. The pregnancy took a perfectly favourable course and ended with the birth of a living child, and so far there has been no aggravation whatever of the conditions; the state of the urine is still entirely unchanged, and of other subjective or objective symptoms there is no trace. There has not however been another pregnancy since.

Most instructive, as regards the life-saving influence of the interruption of the pregnancy on the one hand, and as regards the importance of the prevention of pregnancies on the other, measures by which a compara-

tively favourable course of the renal affection has been achieved, is the following case of *Senator*:

Woman, pregnant 12 years ago. Nephritis. Premature labour. After two years fresh pregnancy. In the course of the latter hemiplegia of the right side. The pregnancy is interrupted. Since that time conception has been prevented. The hemiplegia is at the moment almost entirely gone; the nephritis has made no progress; the urine contains only slight traces of albumen.

It must certainly be admitted that the consideration of the subject on the strength of hospital material exclusively, supplies a rather gloomy picture, since that material generally consists of the severest cases only and is recruited from a class of people who are not in a position before and during pregnancy to take care of themselves, and in whom nephritis takes from the very beginning a virulent course. *Hofmeier* who in a previous calculation saw of 137 renally-diseased pregnant women 33% die before and during parturition from the effects of nephritis (without eclampsia), admits now that this figure is rather too high. Among the better classes the prognosis is somewhat more favourable. And yet it is not good enough to enable us to say that *Fellner* is wrong when he asserts that: "a pregnancy complicating chronic nephritis leaves behind it far more serious detriments than for instance in the case of heart-disease.—The prognosis of pregnancy complicated by chronic nephritis is a very sad one for mother and child, a fact which has not hitherto been sufficiently appreciated by medical practitioners or the lay public."

As regards the dangers which threaten the life of the mother apart from the increase in the nephritic process, we can summarize them briefly: They are principally premature detachment of the placenta with atonic hæmorrhages, and eclampsia. The latter certainly occurs in a smaller number of cases than in pregnancy-nephritis, although the main causation recognised by the majority of authors, namely insufficient activity of the kidneys and deficient elimination of toxic products is the same in both processes. This is not the place to enter into a detailed description of the theories of eclampsia, but the reason is prob-

ably that in chronic nephritis, as we shall soon see, miscarriage occurs very frequently and at a very early stage, and that with the expulsion of the fœtus a source of toxæmia, so to speak, to the maternal organism disappears.

Prohibition of marriage for women with chronic nephritis.—What are the conclusions to be drawn, from the facts narrated above, by the medical practitioner who is asked whether females with chronic nephritis should be allowed to marry? There can be no doubt from what has been said that a radical prohibition of marriage is perfectly justified. Where the persons seeking advice on the point think that they have reason to disregard it, the physician's duty is to inform their relatives as to the dangers of the marriage and to point out the importance of averting it, if possible.

In the first place the avoidance of pregnancy by the employment of anti-conceptional remedies—it is not necessary to say here anything as to their nature—is to be recommended. Where the injurious influence of pregnancy is eliminated, we may take it for granted that chronic nephritis takes no other course in married women than in those unmarried.

Interruption of the pregnancy in chronic nephritis.—Where pregnancy has occurred, the physician will have to consider whether and for how long he must try to obtain an improvement in the symptoms by the usual dietetic and other therapeutic remedies directed against nephritis, and whether it is possible to await the natural end of the pregnancy. On this point almost all obstetricians are agreed—contrary to what has been said above in respect of pregnancy-nephritis—that active interference is indicated, especially if a material aggravation has taken place from the commencement of the pregnancy and the symptoms have rapidly reached a dangerous degree. Nature herself shows us the way, since there frequently ensues after the death of the fœtus and its spontaneous expulsion, an improvement in the nephritis—according to *Fellner* a sort of *vis medicatrix naturæ*, and at the same time a proof how injuriously the products of the fœtal metabolism react on the kidneys.

With regard to the time of interference it is not possible

to lay down any definite rules; nor does the alleviation expected from the artificial labour-act always set in. But in any case it is to be presumed that the longer the chronically diseased kidney of the pregnant woman is subjected to the sum of injurious influences the more severe and the less reparable the alterations will become. The decision to induce artificial abortion will therefore be taken as early as possible, if the albuminuria becomes more pronounced, if the organised elements, namely the hitherto scanty casts become more abundant, if frequent headaches, gastric and intestinal troubles point to an increasing insufficiency of the renal activity, if hæmorrhages occur, but above all if there are signs of disordered cardiac action, of commencing retinitis albuminurica or of eclamptic attacks. Disturbances in the cardiac compensation render the artificial determination of the pregnancy at as early a period as possible more imperative than any other condition, since it is but natural that the older the fœtus is and the more fully developed, the greater the demands made upon the action of the heart during the labour-act. Severe collapse with a fatal issue has repeatedly been observed in chronic nephritis during and immediately after labour.

The decision of an early artificial interruption of the pregnancy in the case of nephritis of the mother will not cause any great difficulties to the medical attendant, the more so, as the chances of a viable child being born are comparatively very slight.

With every fresh pregnancy, as we pointed out more circumstantially above, the danger to the mother becomes greater and greater, and she is brought "nearer and nearer to her grave." For this reason it is the duty of the physician even where a first pregnancy has been successfully tided over, contrary to his expectation, to warn most energetically against further conception.

Should nephritic mothers suckle their children? Whereas, according to *Senator*, a pregnancy-nephritis which has been overcome offers no contra-indication, lactation is in the presence of chronic nephritis not to be recommended, because it appears to act unfavourably upon the state of health of the

mother. (See Senator "Die Erkrankungen der Nieren, 2nd edit. p. 248.)

The influence of the nephritis of the parents upon the offspring.—Let us consider now the influence which inflammatory diseases of the kidney in one or other of the parents exert upon the life and health of the offspring. Here also the illness of the mother is by far of greater importance.

In pregnancy-nephritis the consequences are practically of no moment. Where out of regard for the welfare of the mother a premature interruption of the pregnancy is not rendered necessary, there is not associated with the disease any injury to the viability of the embryo.

It is however different in the case of chronic nephritis. Here, there are, quite apart from the requisite medical interference, two factors which are disastrous for the fœtus: In the first place chronic nephritis in a pregnant woman causes not infrequently intra-uterine death of the fœtus, an observation for which we are indebted to *Fehling*. The causes lie chiefly in a deterioration of the nutrition-material which reaches the fœtus, as the maternal blood is loaded with toxic matter owing to the insufficient action of the kidneys. Then there are placental changes which lead to an obstruction in the placental circulation and consequently to a deficient nutrition, a sort of "slow inanition" of the fœtus. These changes consist according to *Fehling* in the appearance of so-called white infarcts, in disease of the fœtal blood-vascular connective-tissue apparatus, in destruction of numerous placental villi, degeneration of the chorion, and similar other such occurrences. Secondly, the pregnancy is frequently interrupted spontaneously through premature labour. According to figures quoted by *Hofmeier* there occurred premature labour 13 times and abortion 17 times out of 45 cases of chronic nephritis. *Braun* saw as many as 89% of his cases end in premature labour; *Fellner's* statistics relating to cases from *Schauta's* clinic show 50% of premature labour; the entire mortality of the children amounted in cases without eclampsia to 34%; others give much higher figures.

But whereas the dangers of chronic nephritis in the procreator are great to the offspring, while the latter are as yet in the fœtal state, they are only insignificant at later periods. Among the hereditary diseases, at least when using the term in its popular sense, chronic nephritis is not included, or better said, there are only a few isolated cases in which a sort of extraordinary "hereditary albuminuria" has been reported as having attacked members of the same family at various ages as far as the third generation. In the French literature mention has recently been made several times (*Fournier, Fieux* and others) of an "hereditary albuminuria" and nephritis in newly-born children and sucklings whose mothers had been eclamptic. We cannot however speak here of an heredity, seeing that these are cases of direct toxic action on the part of the blood of the eclamptic mother upon the fœtal kidneys. As to the later history of such children and especially whether these albuminurias pass afterwards into chronic nephritis there is no sufficient material as yet collected. All these observations are so far more of interest as literary curiosities than as factors possessing any practical importance.

Summarising at the termination of our remarks on the relations between nephritis and marriage the principal conclusions which are important in guiding the medical practitioner to arrive at a decision, they may be said to be as follows: The duration of life of candidates for marriage suffering from nephritis is, to begin with, shorter than under normal circumstances. This applies to an unequally greater extent to the female sex than to the male in so far as, with regard to the former, marriage and particularly pregnancy with its consequences supply factors which are capable of causing considerable injuries to the kidneys, which almost invariably aggravate an affection already existing and which not infrequently are directly dangerous to life.

For this reason the decision of the medical practitioner is of far greater moment to the wife than to the husband. Women with chronic nephritis ought always to be prohibited from marrying. But where they do marry the avoidance of pregnancy must at least be insisted upon; if pregnancy has

occurred the earliest possible interruption of the same is indicated, in case the symptoms undergo an aggravation, not only on account of the life of the mother but also in view of the improbability that the embryo will be born alive. Much less dangerous is the nephritis of pregnancy, and the determination of the gestation in the course of it is far more rarely necessary owing to complications, such as eclampsia, retinitis, etc. Moreover, contrary to what takes place in chronic nephritis, pregnancy-nephritis does not become more dangerous to the mother with repeated pregnancies, but rather less so. A transition to chronic nephritis does happen but is not of frequent occurrence.

Amyloid Disease of the Kidney.

The amyloid disease of the kidneys is a secondary process which may be due to curable and incurable causes. Where the latter is the case, marriage must of course be prohibited. On the other hand it is possible that with the disappearance of the cause of the lardaceous degeneration the process in the kidneys may come to a standstill, and provided the disease has not gone too far for the intact portions of the organs to maintain the function as in the normal state. Thus for instance anti-syphilitic treatment may prove successful against the renal affection as well. The consent to, or prohibition of, marriage does not however depend in such cases upon the condition of the kidneys but entirely upon the syphilis in general; for further details the reader is referred to the respective chapter.

Movable Kidney.

Movable or wandering kidney is of practical importance in the female only. In men the condition has been observed in an insignificant number of cases, and besides, the diagnosis is not always certain. We will therefore consider the influence of the married state in women only.

In the first instance we must examine in this connection whether pregnancy and parturition supply any elements favouring or aggravating the complaint. Opinion on the subject varies. Numerous authors see in the relaxation of the abdom-

inal walls, especially after repeated pregnancies, and in the muscular over-exertion during labour, as well as in the insufficient care after that event, an important factor in the displacement of the kidney. According to *Senator, Rollet*, and others, the predisposition of multiparæ to movable kidney is greater than in other women. On the other hand *Brault, Matthieu, Knapp* and others have noticed also in multiparæ without any flaccidity of the abdominal wall a considerable percentage of movable kidney. At any rate the influence of pregnancy in this respect is unmistakable. It cannot be denied that the symptoms of an existing movable kidney often exacerbate during pregnancy and more so after the confinement, and this becomes apparent principally by the increase in the pain. That it is possible owing to the pressure of the pregnant uterus for hydronephrosis or intermittent hydronephrosis to develop occasionally in a dislocated kidney has been proved by a few reported cases.

On the other hand observations have been recorded where the complaints caused by movable kidney have not only subsided during pregnancy but where the dislocation appeared rectified after parturition. In such cases marriage exerts therefore a decidedly healing influence.

In any case floating kidney is in by far the preponderating number of cases so harmless a complaint, and severe complications in the married state are so rare that it does not present any reasonable ground for prohibiting a marriage.

Pyelitis, Pyelonephritis and Pyonephrosis.

We will consider these diseases together since they only represent different degrees of one and the same process.

The relations which they bear to the married state are also far more prominent in the female sex. In man marriage does not present any special factors which influence the course of these diseases. In so far as the pyelitis is of gonorrhœal origin the consent to the contraction of a marriage will depend upon the remaining manifestations of the gonorrhœal infection and it will therefore be treated in the chapter dealing with the latter disease.

In any case the physician whose advice is sought on the point will have to remember that chronic pyelitis and pyelonephritis is a long-lasting disease which generally resists all internal medication and is no less difficult to treat locally, that perfect cures are not often achieved, but that on the contrary very severe complications may sometimes arise through congestion of urine and retention of pus. The duty of the medical adviser is therefore to point out to candidates for marriage that pyelitis is not exactly so harmless a complaint as it is yet generally thought to be.

In the wife, marriage is capable of giving rise to pyelitic processes, or it may considerably aggravate those already existing to such an extent as to even endanger life. We do not speak here of the transmission of gonorrhœa by means of the sexual intercourse, an infection which is just as often the cause of purulent inflammations of the pelvis of the kidney in women as it is in men. It is rather pregnancy which we are thinking of and which offers a most favourable soil for the formation and progress of pyelitis.

The causes lie first of all in the congestion which takes place during pregnancy in the pelvic and abdominal organs. The bladder is affected in the first instance and as long as the process may advance from there upwards as far as the pelvis of the kidney, the latter is therefore indirectly also subject to be attacked. But the kidneys themselves also become congested with blood and offer therefore to the microbes coming from the neighbourhood into the pelvis of the kidney by means of the circulation a suitable medium of propagation. Secondly, mechanical conditions also come into play; overcrowding in the pelvis on account of the pregnant uterus, and still more, a stranguation of the ureter leading to an obstruction in the passage of the urine, thus causing in its turn further venous congestion and thereby facilitating the settlement of infective existing agents in the pelvis of the kidney.

What influence does pyelitis exercise upon the course of pregnancy? The latter may in spite of grave symptoms reach its natural end.

Fellner reports two such cases: they both refer to the

same pregnant woman, during her first and second pregnancies. In the first pregnancy the symptoms were at the beginning rather slight; but at the 6th month a considerable aggravation took place. There was a discharge of pus from the right ureter, as proved by cystoscopic examination. Neither general nor local treatment appeared to have any effect, so premature labour was decided upon. The patient however would not agree to this, and gave birth afterwards to a living mature child. The same process repeated itself in the second pregnancy.

A similar favourable result was also recorded in the cases of *Vinay*. For this reason, this author is opposed to the artificial interruption of the pregnancy even in severe cases. Others, like *Depage*, *Fellner*, etc., try at first to remove the complaint by suitable treatment, but are in favour of premature labour being instituted where there is protracted elevation of temperature and an unsatisfactory general condition, the more so as with the occurrence of the abortion and the disappearance of the pressure and the congestion, the pyelitis also disappears as a rule.

Sometimes pregnancy may give rise to an aggravation of simple pyelitis to the extent of severe pyonephrosis. Such a case is communicated by *Israel*:

The patient in question miscarried in her first pregnancy. In association with this, cystitis; 3 years afterwards, renewed pregnancy. In the course of the latter there were as yet no renal complaints, but during the puerperium, pain in the left side and fever. The disturbances subside until the next pregnancy and puerperium, which, particularly the latter, cause such an acute exacerbation of the symptoms that nephrotomy becomes necessary. In the third pregnancy, violent pains in the abdomen. Growth of a pyonephrotic sac, to the size of a child's head. Later, nephrectomy.

Pyelitis is therefore in women also by no means a harmless affection, and women with pyelitic symptoms should in any case undergo a thorough treatment before being allowed to marry.

According to some authors (*Depage*, and others) the pyelitis of pregnant women is altogether not a process which commences during pregnancy, but a recrudescence of old inflammatory remains, such as is caused especially by the upward extension of cystitis which is so frequent in women.

Tuberculosis of the Kidneys.

In the consideration of the influence of the married state upon the tuberculosis of the kidneys and of the question of the consent to marriage in such cases, we can here take notice of those forms of the disease only, in which the tuberculosis has attacked the kidneys exclusively, or at least where the renal symptoms occupy the foremost place in the clinical picture. Where the disease of the kidneys forms a part-symptom of a general tuberculosis, and especially where it is present in combination with pulmonary tuberculosis, the latter is the factor which will influence the decision of the medical adviser. And also where it is a case of the so-called ascending form, that is, the form which takes its origin from a tuberculosis of the bladder or of the generative organs, the primary cause must necessarily be the decisive element, if only on account of the risk of infection by means of sexual intercourse.

We will therefore discuss in this article only cases of descending or so-called primary tuberculosis of the kidneys which is bound to affect in its later course also other parts of the urinary apparatus. The practical interest of this form lies principally in the fact that it is not at all, as was previously believed, of rare occurrence; but that it is, on the contrary, as *Israel* especially has pointed out, a comparatively frequent disease of the kidneys.

As regards the consequences of marriage to the husband suffering from renal tuberculosis, they are practically covered by those of sexual intercourse altogether, which is sure to favour a rapid extension of the tuberculous process. The abstention from sexual connection in tuberculosis of the kidney appears therefore to be indicated.

In the wife there are to be added to the injurious effects of

sexual intercourse those of its results, namely pregnancy and parturition, and to an even greater extent than it has been repeatedly explained with respect to other diseases of the kidney. *Israel* observes truly: "If the unfavourable influence of pregnancy affects all renal complaints, it does so, above all, tuberculosis." We not infrequently see that for years the malady produces no symptoms at all, or, at the utmost, only such as would result from a slight cystitis with inconsiderable urinary disturbances, a somewhat increased desire for micturition, or similar inconveniences, so that nothing lies further than the thought of a renal affection, and especially tuberculosis. It is only during pregnancy that a rapid aggravation of the symptoms takes place, which guides to a correct diagnosis. This is clearly demonstrated by a case described by *Israel*. (*Chirurg. Klinik der Nierenkr.*, p. 220.)

Mrs. G., 20 years old, has with the exception of a somewhat frequent micturition and a paroxysmally occurring pain in the region of the left kidney, which however disappeared very quickly, never suffered from any illness of the urinary organs. She married without knowing that she was subject to any disease. In the first months of pregnancy rapid decline, under formation of an enormous renal tumour. In the purulent renal secretion tubercle bacilli were demonstrated. The left kidney is removed, and is seen to have changed into a system of large pus-containing sacs separated by thin partition-walls. The pregnancy goes on after the nephrectomy without any disturbance. The patient is confined of a healthy child, and has since undergone several pregnancies without any injury.

It is possible even for several pregnancies to pass without any symptoms until the last one occasions a considerable aggravation of the disease which had hitherto hardly been noticeable, or at any rate unknown to the patient and her friends. A remarkable instance of this sort is also contained in *Israel's* casuistic communications:

In a patient who has already gone through two normal confinements and in whose history there is noth-

ing of consequence to be mentioned except a pleurisy from which she suffered at an early age, and occasional bronchial catarrhs, who had further never complained of any troubles in connection with the urinary organs, except an increased desire for micturition, there came on in the first month of pregnancy violent renal colic. The right kidney swelled up rapidly and considerably, the right ureter was distinctly to be felt thickened. After the induction of abortion the condition improved, the attacks of colic appeared at long intervals, the swelling disappeared. The tuberculous nature of the disease being afterwards established with certainty, the kidney was extirpated.

Finally it is possible under the influence of pregnancy for an operated and healed-up tuberculosis of the kidney to break out afresh. *Israel* communicates the following pertinent case:

In a woman with renal tuberculosis the amputation of the upper third of the left kidney is performed. After the operation the urine becomes perfectly clear, the patient goes through a pregnancy and labour without injury to her general health. In the second pregnancy miscarriage occurs in the second month, and is succeeded by marked lassitude, fever and frequent micturition. The urine contains pus and some albumen. Tubercle bacilli are not found. Nephrectomy reveals a tuberculous kidney.

Much more deleterious are the consequences of pregnancy if the tuberculosis not only attacks one kidney, but if after the operation of nephrectomy the remaining organ is also found not to be perfectly intact. A case communicated by *König* illustrates this condition better than any amount of theoretical explanation:

The left kidney of a 17-year-old girl is removed on account of tuberculosis. Despite the proof that the right kidney is also affected the patient gains in weight, feels perfectly well and enjoys life so much that she is constantly and for years worrying the operating surgeon to allow her to get married. He refuses to do so.

The patient marries contrary to advice, becomes pregnant, develops hæmaturia and dies in the puerperium.

To avert these dangerous consequences if pregnancy has supervened, two remedies come into consideration: artificial premature abortion and nephrectomy. If practicable, and above all, if the condition of the second kidney offers no contra-indication, the latter course is to be preferred. The abortion, it is true, removes the danger for the moment, but it is naturally not to be expected that it will act as a permanent cure of the tuberculous process, whereas such a result is possible after nephrectomy. That notwithstanding nephrectomy a pregnancy can continue to its natural conclusion and that also subsequent pregnancies and labours may run a favourable course is proved by the above-quoted cases.

What are we to conclude now from these facts with respect to the consent to marriage? It is only those cases that can come here into question, where a successful treatment, either medicinal or surgical, has been instituted, cases which consequently do no longer exhibit any symptoms; for, that cases with manifest renal tuberculosis necessitate an absolute prohibition of marriage, follows as a matter of course, apart from other reasons, from the aggravation which sexual intercourse occasions to begin with. The difficulty for the physician lies chiefly in the circumstance that but in rare cases the diagnosis of commencing tuberculosis of the kidneys can be readily made. There is hardly another disease of the urinary organs which in its early stages is so often mistaken as this one. If with the exception of a slight increase in the frequency of micturition there is nothing to point to an affection of the uropoetic system, if the urine is perfectly normal or if it shows at the outside insignificant cystitic changes, such as are frequently observed in the female sex without any special reason, if the patients present at the same time for years the picture of perfect health, it is not surprising that tuberculosis is little thought of, and especially tuberculosis of the kidneys. Nevertheless it must again be emphasised that the disease is by no means rare and that it deserves the attention of the general practitioner.

In the cases which have undergone treatment, particularly

in those where by the extirpation of the kidney the tuberculous focus has been eliminated, where there has consequently been as yet no spreading of the disease along the ureters into the bladder, as may be proved among other means by cystoscopic examination, and where the persons concerned have for some time since the operation enjoyed perfect health, an absolute prohibition of marriage is probably not quite justified. Here at least there need not be any injurious influence exercised on the part of the marriage; for we have seen in some of the cases mentioned above that after nephrectomy repeated pregnancies have been well endured and that they resulted in the birth of viable children. The definite decision of the medical adviser will not depend so much either on the previous history of the disease, that is, the tuberculosis, but it is rather the circumstance generally whether and when marriage is permissible after the sacrifice of so vital an organ as the kidney, that will constitute a weighty argument in the consideration. This question will yet engage our attention in another place.

Renal Calculi and Renal Tumours.

We can deal with these affections in a very few words. Marriage exercises hardly any influence upon the course of nephrolithiasis unless it is upon the pyelitis caused by it. (See under *pyelitis*.) But the physician consulted with regard to the contraction of marriage will have to bear in mind that renal calculus is an affection whose duration and course cannot be determined beforehand, that free intervals extending over long periods happen in its course, but that the life of the patient may be endangered by acute complications and that, even without these, the consequences to the renal activity and to the entire organism may become very serious. At any rate the life-duration of individuals with renal calculi must be regarded as shorter than that of normal persons.

It appears moreover that the offspring of such individuals are also in peril inasmuch as heredity plays here undoubtedly a part, though, with respect to calculi, not to such an extent as was formerly believed. It certainly more rarely happens that nephrolithiasis as such is inherited than that allied con-

stitutional anomalies especially gout and diabetes are met with in the respective families.

Be that as it may, the physician will have to point out to the descendants of families so predisposed the risk which they are running, and to endeavour to prevent the disease, especially if such districts come into play in which lithiasis is endemic, and if there are also other unknown factors concerned in the matter, such as climate, the constitution of the soil, drinking-water (?), etc. Since we are at present powerless in the face of these factors about which we know so little, it will often be necessary to recommend a removal into some other locality.

It is scarcely necessary to mention that no cautious medical man will ever think of consenting to the marriage of persons with renal tumours.

Renal Operations especially Nephrectomy.

The great success which renal surgery has achieved in recent times makes it of practical interest to consider the question whether and how far it is justifiable to prohibit the marriage of individuals who possess only one kidney. This point has as far as we know been raised for the first time by *Schramm* in connection with a case which he reported in the *Berliner Klinische Wochenschrift* in 1896.

It concerned a patient who, having undergone nephrectomy in 1891 on account of hydronephrosis, married 3 years later and became pregnant soon afterwards. During the pregnancy the excretion of urine increased to a marked degree; the urine was of low specific gravity and contained albumen, so that it was at first thought to be a case of chronic nephritis. Later on *Schramm* considered that a congestive albuminuria was a more probable cause; the labour passed off normally and the albuminuria disappeared rapidly soon afterwards.

On the strength of this observation *Schramm* goes into the subject which interests us here, namely on the attitude of the physician in the presence of a woman with one kidney who wishes to marry, and whether, if she is already married, she

has to apprehend any serious dangers from eventual pregnancies. In spite of the favourable issue in his case he takes up a rather reserved position; he arrives at the result that such "patients" should be prohibited from contracting marriage or at least from cohabitation, because they expose themselves during pregnancy to the risk of a pregnancy-nephritis or chronic nephritis, against which, having only one kidney, they will naturally be able to offer but a diminished resistance.

To-day when the casuistic literature is more extensive than it was at that time, it is open to argument whether this absolutely pessimistic view is justified at all. The points of view which should guide the physician in his attitude that need not necessarily be a negative one are in our opinion as follows:

1. It is necessary that the nephrectomy be dictated by a cause which has at least in all probability been removed with the removal of the kidney. But if the operation was indicated by the presence of a malignant tumour (carcinoma, sarcoma, struma renalis, etc.) the risk of relapse justifies a prohibition of the marriage. So far, at any rate, the distant results of operation in such cases even if it is performed at the earliest stage, are not good enough, to warrant the assumption of a longer duration of life.

2. Where the original illness is in itself no obstacle against marriage, the remaining kidney must with certainty be known to be anatomically and functionally sound; otherwise there is, particularly in pregnancy, great danger. I have already mentioned the case of *König* where a person with a diseased second kidney lived apparently in good health until she married; during her pregnancy disturbances on the part of the renal activity made their appearance, and the woman died in the puerperium. The case illustrates the oft-repeated experience that a diseased kidney is capable for some time of fulfilling the demands made upon its function by the organism, but that it becomes unequal to it as soon as these demands increase for any reason to too great an extent. The fears entertained by *Schramm* that the remaining sound organ will also be affected by the more difficult circulatory conditions established during pregnancy, by the increased secretory activity, especially in so far as the toxic

substances formed by the maternal and foetal organisms are concerned and by similar other agencies, are certainly justified and noteworthy, at least theoretically. Nevertheless experience, which is after all our best teacher in spite of all theoretical assumptions, shows us that these apprehensions need not by any means always be realised in practice. Thus *Tredondani* reports, though more as a curiosity, the case of a woman in whom nephrectomy was performed, and who gave birth afterwards to 3 healthy children; and he reproves those earlier authors who desired to ascribe to the operation an injurious influence upon pregnancy. And from *Israel's* rich experience we have in previous passages also quoted several cases in which pregnancy ran a normal course in spite of previous nephrectomy.

In man the conditions are naturally far more favourable than in woman. Really speaking, there are no factors in his case which can occasion an injurious influence upon the married state, provided the above precautions are duly taken.

How very little agreement there is between a too rigorous interpretation of the condition of affairs and the actual facts, was shown to me by a case of my own observation, in which a man who had had one of his kidneys removed on account of pyonephrosis was strongly advised by a high medical authority not to get married; an engagement into which he had already entered was consequently broken off. The gentleman in question did not however adhere to the medical advice for good; he married subsequently and is now after 8 years of married life the father of 3 healthy children; he is in splendid health.

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XIV

Gonorrhœal Diseases in Relation to Marriage

Health and Disease
in relation to
Marriage and the Married State

XIV

GONORRHOEAL DISEASES IN RELATION
TO MARRIAGE

By Professor A. Neisser (Breslau)

Object and purpose of marriage.—We regard as the object and purpose of marriage:

(1) The legitimate gratification of the sexual desire which is rendered possible by conjugal cohabitation. Public opinion as well as law-books speak of the "duties" to be fulfilled during the married state.

(2) The procreation of offspring, which is necessary for the purpose of continuing the human species in general and the family in particular, but which also meets a psychical want on the part of the parents and particularly on the part of the mother. It is evident that it lies in the interest not only of the parents, but also of the State that the after-coming generations shall be physically and morally sound.

(3) An increase in the reciprocal happiness which can be obtained by close companionship and by the sharing of all joys and sorrows, and an increase in their usefulness in the merely human as well as civil spheres of the persons united in matrimony. With this is associated the obligation to maintain the family and to educate the children into good citizens and productive members of human society.

If from such a consideration of the duties imposed upon man by the married state, it becomes evident that diseased individuals should, generally speaking, not be allowed to marry

at all, because they are not in a position to fulfil all the objects of marriage mentioned above, this conclusion applies with the greatest force to the sexual diseases in particular.

Dangers of sexual diseases.—Not only is the purpose of marriage here endangered or rendered impossible of realisation by the fact that one of the contracting parties enters into it in a diseased condition, but the further risk is added that the other partner will, in virtue of the communicability of the disease, also be attacked, and that the object of the union will thus be entirely or partially frustrated by the illness of *both* partners. It is even possible for a complaint acquired in a first marriage to render a second one impossible. An aggravating psychical element is furnished by the circumstance that the disease acquired by the infected partner through contagion is not regarded, like any other illness as an unfortunate affliction, but that a feeling is engendered instead, which, if it does not always actually lead to an outward dissolution of the marriage, causes at least an inner estrangement which often destroys the happiness of the union for good. Though the partner bringing the disease into the marriage is often "morally" excused, because he was not aware of his illness and of the consequences springing from it, or because he regarded himself on the strength of medical advice as a fit subject for marriage, there yet remains for the other partner, who has acquired the disease through infection, the fact and the knowledge that the party who was already suffering from the complaint before the marriage is the cause of his—or her—illness, even if the word "guilt" is not always mentioned.

There is hardly another disease dealt with in this book—not even syphilis—that has such far-reaching and momentous consequences for the married state, as gonorrhœa.

Especial danger of gonorrhœa in marriage.

—In the first place gonorrhœa is an eminently contagious disease, the infection taking place almost exclusively by means of sexual intercourse.

The contagiousness may, moreover, last for months, or years, and yet the phenomena from which the contagion proceeds may be so slight, that the presence of the still existing infec-

tious disease can be recognised by the most careful observation only and by special examinations undertaken for that particular purpose.

Secondly, gonorrhœa attacks principally, and in most cases almost exclusively, those organs which are entrusted with the sexual functions, so that there is a disturbance in, or a destruction of:

(a) the capability to procreate or to give birth to descendants, the *potentia generandi* in the man, the *potentia gignendi* in the woman; (b) the power to perform coitus, the *potentia cœundi* of the man.

Finally, however, there supervene severe complications and sequelæ which may lead to permanent bedridden infirmity, inability to do any work or follow an employment; valetudinarianism and extreme nervous disturbances; all diseases which interrupt most materially the happiness of an harmonious marriage, but which result often enough also in most serious troubles to the maintenance and support of the family, thus causing dire distress.

The consideration which gonorrhœa deserves on account of these melancholy consequences with regard to the subject of marriage is in so far the greater as it is one of the most prevalent diseases to which mankind is subject, and as it certainly is not, in point of frequency, surpassed by any other disease, if we take into account the age at which marriage generally takes place. All statistics show that of the venereal diseases which come under the notice of medical men anywhere, at least 50-70% of all the cases are represented by gonorrhœa; and this in spite of the fact, that gonorrhœa particularly, more so than syphilis and the contagious ulcerations, escapes very often statistical utilisation, partly because the patients (in very numerous cases) do not seek medical advice, and partly because the sequelæ produced by gonorrhœa are not always recognised in their true etiological connection. The assertion that of the adult male population inhabiting large towns permanently or temporarily, only an insignificant proportion escapes gonorrhœal infection, is probably, extreme as it may sound, not at all exaggerated.

And yet it is just this very prevalent disease—the importance of which is underrated more than that of any other—which is hardly noticed, and which is either not treated at all or only improperly and insufficiently. No wonder there is a large number of uncured cases, or in other words, of cases which possess full infectiousness, but which do not constitute a disease in the eyes of the persons affected.

Gonorrhœa is, as is well known, either a disease which remains localised in the seat of infection, or one which spreads over various organs in the shape of complications and metastases. It is not, however, a “constitutional” disease which modifies the tissues and juices, and hence we know nothing in connection with it which could in any way be interpreted as “immunity.” But it is in this very circumstance that there lurks a danger from gonorrhœa to the married state, the important fact being that the same individual may often be again attacked by the disease, and withal, later in life when about to marry or when already married, notwithstanding that he has in his younger years had one or more attacks of the infection.

A further factor is the ease with which the disease is conveyed to other persons. It is sufficient that the infective gonococci should come in contact with a suitable, though quite healthy mucous membrane, and that they should be deposited upon it—without any injury to its surface—for these micro-organisms to multiply and subsequently to penetrate into the tissues, and thus to give rise to the disease. There is consequently even no need for the accomplishment of the sexual act in order to cause infection; the simple contact of the two respective genital organs or the moistening of these organs with a secretion containing gonococci is sufficient.

It is clear that the danger of infection is greater, the greater the quantity of gonococci still present. For this reason chronic gonorrhœas are always less serious than the acute ones, and not infectious every time there is sexual connection. In the married state, however, there is a danger in every case, since, on account of the frequency of the intercourse, even a few gonococci still present must eventually become active, particu-

larly as frequent coitus (such as is indulged in during the first few weeks of married life, perhaps, after a long abstention previous to marriage) is in itself sufficient to lead to an increase of inflammatory manifestations, and consequently to a multiplication of the gonococci.

Import of the two sexes.—Are the two sexes affected to the same extent by the injurious consequences to the married state just mentioned? There is no doubt that on the whole the danger proceeds more from the husbands than from the wives. But there is in this direction a very material difference according to the social position of the men and women.

Frequency of gonorrhoea in men.—As regards men, it may be said that the preponderating majority of them—it would be perhaps more correct to say, with very few exceptions,—without distinction of social conditions, rank or education are in the habit of indulging in sexual intercourse before marriage and that they are consequently subject to the danger of venereal infection. The risk of infection is not however the same for men of all classes. It is certain that those belonging to the better and richer circles (merchants, officers, students, etc.) are attacked in proportionately far greater numbers than those belonging to the lower strata (workmen, soldiers, etc.). The prevalence of venereal disease among males is always greater in proportion to the extent to which they are forced through circumstances to resort to intercourse with mercenary prostitutes. Workmen, soldiers, and so on, can more easily find non-prostitute girls of their own class willing to enter into amorous relations with them which result in sexual intercourse, and they are therefore less exposed to the danger of infection than those men who have recourse almost exclusively to prostitutes who lend their charms for gain.

On the other hand the dangers to the married state arising from men of the better classes are not so great as those emanating from men of the lower social scale, and this applies both to the time when the marriages take place as well as throughout the married life. The better knowledge of the

medical aspect of the question which prompts the more affluent members of society to seek, and subject themselves to, proper treatment, contributes in no small measure to the real cure of more gonorrhœal cases among them than is the case among uneducated men who concern themselves but little about their diseases as soon as the latter cease to cause them real trouble. There is also an additional danger in the fact that individuals of the lower classes marry as a rule earlier than those of the upper classes, and that many young men of this description enter married life with their gonorrhœas in an active state. Among hospital out-patients fresh attacks of gonorrhœal infection in married people are also seen far more frequently than in private practice. To what extent a different conception of "morality" among the two classes is responsible for this difference in the number of infections acquired extra-conjugally by the two classes of men, it is difficult to say. In any case, there is the factor to reckon with, that married men belonging to the working-classes have in such cases as a rule recourse to street-walking prostitutes, while the married men of the better classes, who know too well the danger of prostitution and are in a position to pay for better-class female intercourse, are more in the habit of visiting the less dangerous "demi-monde" or of indulging in the luxury of keeping a mistress.¹

Frequency of gonorrhœa among females.—

Now, with regard to the poorer and lower classes, it is noteworthy that many girls belonging to them undoubtedly enter the married state in an infected condition, acquired previous to marriage. While gonorrhœa hardly ever occurs among girls of the higher classes—the relative infrequency of pre-nuptial sexual intercourse naturally protects these girls from venereal

¹Translator's Note: This description is no doubt accurate in every detail for the continent of Europe. It does not however apply, in my opinion, to England. From a fairly extensive experience, I can say that gonorrhœa among married men of the working-class is very rare indeed, unless it is a relapse of an infection which existed previous to marriage. By close questioning I have nearly always been able to establish the latter point. On the other hand, I am sorry to have to say, that of the fresh cases which come under my notice a very fair proportion—about 20%—are those of married men, presumably belonging to the better classes.

infections as well—we have to take into account among those on the lower scales of the social ladder a far more frequent, and often even regular sexual intercourse, the natural result of which is that those who are in the habit of associating sexually with several men, are often infected with gonorrhœa.

We must even take it for granted with the utmost certainty that the number of female persons thus affected with gonorrhœa is not inconsiderable, at any rate it is far greater than that shown by statistics. The difference between the number of gonorrhœally-diseased men and that of gonorrhœally-diseased women, as revealed by statistics, is so enormous, that it cannot possibly agree with the real distribution of the disease among the two sexes, even if we are prepared to admit unreservedly that, as a matter of fact, absolutely far more men suffer from venereal disease than women, because a large number of men derive their disease from a small number of prostitutes, each one infecting several men. That the statistics relating to gonorrhœa in women are so imperfect is easily explained. In the first place it is to be considered that the absence of all symptoms especially in infections of the cervix, and in urethral forms, leaves the patients as a rule ignorant of their illness, and causes them to refrain from seeking medical advice. Moreover, though they do feel ill, women are often prevented by shame and reticence from subjecting themselves to medical examination and treatment. But even the severe ascending forms are frequently not included among cases of gonorrhœa, because the real cause of the "internal" complaint is not recognised. How many cases of female gonorrhœa escape observation can also be judged from the frequency of blenorhœa neonatorum in children, whose mothers had never before been under treatment for gonorrhœa.

Statistical observations on gonorrhoeal diseases.—An indication of the prevalence of venereal diseases, and especially of gonorrhœa, in both sexes, which we are now discussing, is furnished by figures which are extracted from the 20th supplementry volume of the "*Zeitschrift des Königlich Preussischen statistischen Bureaus.*" At the instigation of *Schmidtman* a statistical tabulation of the distribution of vene-

real diseases in Prussia was instituted on April 30, 1900 on the part of the Prussian Board of Education, the results of which were published by *Guttstadt* in the above-mentioned publication.

The question-forms related to the ascertainment of the number of patients under treatment from April 1, 1900 up to and including the 30th of that month, and were answered by 63.45% of the medical men.

There were returned on the 30th April as venereally diseased:

30,383 men corresponding to 28.2 per 10,000
adult men,
10,519 women corresponding to 9.24 per 10,000
adult women,

figures which show a very considerable difference between the two sexes.

As regards gonorrhœa, there were returned on the 30th April, 1900:

16,676 men, equal to 54.89% of the venereal
diseases observed in men,
5,295 women, equal to 50.34% of the venereal
diseases observed in women.

These figures show that of the venereal diseases gonorrhœa plays in both sexes the same part.

Calculated in proportion to the entire population, we have on the other hand:

15.48 gonorrhœas per 10,000 adult men,
4.68 " " " " women.

If we take however, the figures of venereally diseased persons under treatment in all the hospitals of Prussia in the course of the year 1899 we find almost equal numbers of men and women, namely:

15,181 men and 14,405 women.

Neither do we find a very great difference between gonorrhoeic women and gonorrhoeic men, namely:

Of 15,181 venereally diseased men there were

6,790 with gonorrhœa = 44.72%.

Of 14,405 venereally diseased women there were

5,609 with gonorrhœa = 38.93%.

This fact of an apparently equal prevalence among the two sexes assumes, however, a different aspect, when we learn that of the whole number of women under treatment no less than 5,489, in other words, 38.19% were prostitutes.

The conditions observed in sick-clubs are very interesting.

1. Berlin Industrial Sick-Club.

Per 10,000 male and female members respectively there were:

In the Year	Venereally Diseased		Gonorrhœally Diseased	
	Men	Women	Men	Women
1892	490.9	302.1	309.1	135.0
1893	550.1	305.2	352.6	175.5
1894	554.8	92.2	353.2	47.4
1895	549.0	63.0	367.9	35.1
1896	655.2	136.6	443.1	93.9
1897	619.0	171.6	403.5	99.8
1898	687.5	134.9	412.0	69.0

A comparison of the figures discloses in the course of years a steady increase in the number of the men, and a corresponding decrease in the number of the women; which is perhaps an indication that the men of the labouring classes are also beginning to have intercourse more with prostitutes and less with girls of their own station in life.

The striking fluctuations in the figures relating to the female members show how very little reliance can be placed upon the figures altogether, and what a slight indication they offer as to the prevalence of venereal diseases generally, and gonorrhœa especially.

2. Halle o/S. 38 Sick-Clubs.

- 1897: 22,060 members (men and women) included
266 venereally diseased.
- 1898: 22,778 members (men and women) included
244 venereally diseased.
- 1899: 23,897 members (men and women) included
257 venereally diseased.
- 1897: Of 100 venereally diseased 93.61 were men
and 6.39 were women.
- 1898: Of 100 venereally diseased 92.62 were men
and 7.38 were women.
- 1899: Of 100 venereally diseased 92.61 were men
and 7.39 were women.
- 1897: Affected with gonorrhœa were 193 men and
7 women, together 200 members.
- 1898: Affected with gonorrhœa were 175 men and
9 women, together 184 members.
- 1899: Affected with gonorrhœa were 180 men and
8 women, together 188 members.

3. Frankfort o/M. Sick-Clubs in 1896.

Here we find contrary to other observations a fairly equal prevalence of venereal diseases among the two sexes:

- 45,760 male members included 1493 venereally
diseased. Per 10,000 male members 326.27.
- 16,190 female members included 518 venereally
diseased. Per 10,000 female members 319.95.
- 61,950 members altogether included 2011 vene-
really diseased. Per 10,000 members 324.62.

The conditions are different in regard to prisons, and especially penal establishments with comparatively high percentages of sick females, which can be explained by the supposition that there are among them very many old prostitutes, both controlled and "secret" ones, and that the principal fallacy underlying all the statistics relating to women, namely that the disease is overlooked does not apply in this case, owing to

Gaols.

	Years					
	1894/95	1895/96	1896/97	1897/98	1898/99	1899/1900
For venereal diseases there were treated altogether . . .	482	430	421	441	297	294
Of 100 venereally diseased there were:						
Men	69.50	70.00	75.77	80.50	80.13	78.91
Women	30.50	30.00	24.23	19.50	19.87	21.09
For every 10,000 men and women, respectively, there were venereal:						
Men	85.32	79.71	95.31	95.51	69.66	62.41
Women	166.91	152.54	147.74	117.84	58.11	56.83
From gonorrhœa, etc., there suffered altogether . . .	404	313	267	309	221	189
Men	289	229	243	283	187	174
Women	115	84	24	26	34	15
Of 100 affected with gonorrhœa there were:						
Men	71.53	73.16	91.01	91.59	84.62	92.06
Women	28.47	26.84	8.99	8.41	15.38	7.94
For every 10,000 men and women, respectively, there were affected with gonorrhœa:						
Men	73.61	60.64	72.60	76.14	54.73	46.81
Women	130.58	99.30	34.76	35.63	33.48	13.75

Penal Establishments.

	Years					
	1894/95	1895/96	1896/97	1897/98	1898/99	1899/1900
For venereal diseases there were treated altogether . . .	430	458	254	173	149	154
Of 100 venereally diseased there were:						
Men	68.37	61.57	66.93	55.49	67.11	63.64
Women	31.63	38.43	33.07	44.51	32.89	36.36
For every 10,000 men and women, respectively, there were venereal:						
Men	112.17	109.97	68.90	45.04	45.79	46.40
Women	296.75	378.09	181.31	211.77	138.42	160.18
From gonorrhœa, etc., there suffered altogether . . .	342	311	133	99	66	74
Men	242	188	83	52	50	49
Women	100	123	50	47	16	25
Of 100 affected with gonorrhœa there were:						
Men	70.76	60.45	62.41	52.53	75.76	66.22
Women	29.24	39.55	37.59	47.47	24.24	33.78
For every 10,000 men and women, respectively, there were affected with gonorrhœa:						
Men	92.33	73.31	33.64	24.40	22.89	23.20
Women	218.20	264.23	107.92	129.26	45.20	71.51

the compulsory examination of all the inmates. It is of course difficult here also to account for the enormous fluctuations.

The following items are extracted from some statistics on the prevalence of venereal diseases in Breslau which I collected in the year 1896 by means of questions addressed to all the medical men of that town:

Replies were received from 81.5% of the medical men who were written to, and altogether 7,685 persons were reported as venereally diseased, 6,940 of whom were residents of Breslau. Of the latter, 3,284 (equal to 8.7% of the population at that time) were affected with gonorrhœic complaints. Among the 3,699 cases of gonorrhœa which were registered altogether, there were only 591 females, and this figure includes 238 prostitutes and 85 women whose gonorrhœa became known only through the blenorrhœic affection of their new-born children.

A further extract from the same statistics shows: Of 3,023 men 398 were married, and 26 alleged to have become infected by their wives. Of the 591 women registered altogether, 85 were declared to be married, and 81 as infected by their husbands.

Let us now return to the consideration of the dangers arising from gonorrhœa to the married state:

I. Danger of gonorrhœal infection in the married state.

Although it really does happen now and then that downright frivolous and almost criminally reckless individuals get married while suffering from gonorrhœa in the acute stage, infecting thereby as a matter of course the other partner, such persons constitute after all only an insignificant minority when compared to the number of infections emanating from cases of chronic gonorrhœa.

Meaning of chronic gonorrhœa.—What do we understand by "chronic gonorrhœa"? Daily observation teaches us that although the bulk of gonorrhœic cases are really cured and a complete *restitutio ad integrum* is obtained

there remain a very considerable number of cases, in which we cannot speak of a perfect cure. Very numerous such cases are left with residues which are recognisable by means of clinical and anatomico-histological examination.

But then experience also teaches us that very many of these "uncured" individuals marry or have been married for years without conveying the gonorrhœa to the other partner.

From this we conclude: Not all these post-gonorrhœic residual affections appear to be—or more correctly said, *are*—infectious; there are among the "uncured cases of gonorrhœa," generally described as "chronic," infectious as well as non-infectious ones.

With respect to the contraction of marriage the question therefore arises: Is it possible to differentiate diagnostically between the two groups of so-called "chronic gonorrhœas" which exist as a matter of fact, and by what means can it be done?

In the front place of the whole consideration we must lay down the following principle: Neither the subjective sensations of the patient, nor the clinical macroscopical phenomena give an indication of the infectiousness of any one particular case.

The most insignificant mucous discharges, of which the patient is not in the least aware, or which he does not feel at all, as well as the alterations in the uro-genital canal, which are accompanied by severe subjective complaints, are either infectious or non-infectious. There may be gonococci left behind in the most unnoticeable, most superficial catarrhs of the mucous membranes, and they may be absent in the most painful stricture-causing infiltrations of the urethra, in painful affections of the prostate, in cystitis, in the most distressing and most dangerous forms of endometritis and diseases of the appendages. Though it is always possible by the phenomena of the last-mentioned group to diagnose that in all probability the disease was originally caused by a gonorrhœic infection, neither the clinical symptoms nor the demonstrable pathological changes offer any evidence whether that infectious gonorrhœic disease is still present, or whether we have

before us nothing but residual inflammatory conditions which have remained behind, notwithstanding the disappearance of the gonococci; for it is very well possible that in spite of the removal of the primary real cause of the disease, such tissue changes should develop which constitute in themselves, so to speak, fresh infections, although they do not of course possess a progressive character.

It is therefore necessary to subject every individual, who presents any abnormal symptoms derived from a former gonorrhoea, to a special examination for the purpose of ascertaining whether these symptoms are still of an infectious nature. Both doctor and patient cannot be warned with too much emphasis that experience has shown that even the most insignificant processes may retain their infectious character.

Particular stress must be laid upon the circumstance that this infectiousness can continue for years in spite of the absolutely certain exclusion of a new infection: practically speaking we must at any rate take it that the gonococci are capable of a vitality extending over many years.

It is believed in many quarters that the gonococci found in chronic gonorrhoeas gradually diminish in virulence. Whether this supposition is right or not—it cannot be said to be proved with certainty—it has not from a practical point of view, that is for the estimation of each individual case, the slightest value. For, opposed to the view, that such a diminution of the virulence is possible, we have the fact in evidence that many most acute and most intelligent gonorrhoeas have not ceased to progress from chronic gonorrhoeas. We cannot therefore close our eyes to the possibility that this infectiousness may continue for a long time, and that it is therefore not true that the virulence of the gonococci diminishes with the progress of the disease. And any gonorrhoea process may be fatal.

It is the question which merits the most thought which we should direct whether marriage should be permitted in the presence of gonorrhoea, and the answer is most obviously in the affirmative. The consideration of gonorrhoea alone should not prevent us from granting that permission should be given in a liberal and not the least unhesitating manner.

in every case without regard to the clinical aspect, be that aspect favourable or unfavourable, if gonococci are found to be present.

Positive results of examination for gonococci.—It is perfectly clear that all those cases in which the examination for gonococci discloses a positive result, are evidence in favour of the correctness of the principle laid down above. Numberless cases are declared every year as "infectious," which would formerly have been regarded as most harmless and insignificant cases of urethritis, and in respect to which every physician would have readily given his consent to a contemplated marriage. Nobody denies, in fact, that the positive finding of gonococci must needs result in a strict prohibition of marriage.

Negative results of examination for gonococci.—But how about those cases in which gonococci are not found? Does the "negative" fact that the physician could not detect any gonococci, like the "positive" fact that there really are no gonococci, prove as strongly that an infection of the one married partner by the other is indeed out of the question?

It is very evident that even the most careful examination does not preclude the possibility of mistake, and it must be admitted that it is never possible to assure a candidate for marriage without the shadow of a doubt that an infection will not proceed from him under any circumstances.

Does it, however, follow that because we cannot with a 100% certainty assure such candidates for marriage of their non-infectiousness, we are under the necessity or entitled to withhold our consent to the marriage of every individual who suffers from a chronic post-gonorrhoeic urethritis?

Consent to marriage.—In my opinion, the very numerous cases in which individuals with chronic urethritis have married without causing any mischief, are proof positive that there are very many cases of uncured urethritis which are not infectious. It would have been wrong to have refused the consent to the marriage of all these patients on the strength of the above theroretical reasoning.

I am therefore convinced that the proper course to pursue is to make the examination for discovering the presence of gonococci as searching as possible and to act accordingly, as we should then be guided in our opinion not by theory alone, but also by practical conclusions. Moreover, experience has taught me and many others—*Jadassohn, Hartung, Herxheimer, Loewenhardt, Schäffer, Neuberger*, and others—that this attitude is the right one, since as a matter of fact the number of mistakes which have been made, notwithstanding the application of all the methods which are at the disposal of science, is practically nil. It is true that the physician who refuses on principle to give his consent to the marriage of individuals suffering from a gonorrhœa which is not quite healed, will never be made responsible for any gonorrhœal infection which may be conveyed afterwards to the other partner, but then he is sure—if his advice is accepted by the patients in every case—to make marriage impossible to numerous men who might have married without bringing any risks upon their wives.

In the first case he may, perhaps, save from infection one woman out of a thousand; in the second, however, he may unjustly condemn to celibacy hundreds of men.

But those are apparently more consistent who, while refusing to take up the same standpoint as myself, proclaim that it is possible to permit marriage only if the gonorrhœa is completely cured, and especially if an entire disappearance of the urethral threads and floccules from the urine has been achieved. They refuse their consent to the marriage in every case of uncured gonorrhœa, without regard to the presence or absence of gonococci, and demand first the absolute disappearance of all the clinical phenomena.

It must undoubtedly be admitted that wherever this can be achieved it is possible to say with absolute certainty that an infection from an individual thus situated is entirely out of the question. And yet I cannot share this view for the very sad, but to me conclusive, reason that this complete cure, in other words, a complete removal of all the clinical appearances cannot by any means be accomplished in regard to the

great majority of the cases affected with chronic urethritis. It stands to reason that I also have endeavoured by all the methods at my disposal to cure every case of chronic urethritis. But though I have succeeded now and then in my object, in the majority of the cases every possible treatment was of no avail. I am however in a position to add that I know also of very numerous cases in which those physicians who allow their consent to the marriage to depend exclusively upon the complete cure of the clinical symptoms, have also failed to cure their patients: for many years therefore I have taken up the standpoint that I allow myself to be guided in the determination of the infectiousness of chronic affections of the urethra, and consequently in the settlement of the principal and most frequent point in connection with the marriage-ability of individuals with old uncomplicated gonorrhœas, solely by the presence or absence of gonococci. As long as gonococci can be proved to be present, or as long as their presence must be regarded as probable, the consent to the marriage must decidedly be refused, and the treatment continued with all energy and by all the means at our disposal until the presence of gonococci can be excluded. From this point of view the treatment cannot at all be carried out energetically enough and long enough.

But where I have obtained what I consider to be a firm conviction that gonococci are no longer present, I permit myself to be guided with respect to further treatment and attempts at cure by the clinical condition.

Uncomplicated, superficial cases of urethritis which proceed without any special complaints I either leave untreated, or else I treat them—more to satisfy the wishes of the patients—with mild astringents, for the purpose of ameliorating the generally insignificant inflammatory symptoms, the formation of mucus and the discharge of epithelium. Where there are demonstrable local lesions, strictures, chronic prostatitis, diseases of the bladder or disturbing subjective complaints, they are of course subjected to most careful and appropriate treatment.

In themselves, these phenomena are as a rule not of a

nature to dictate a refusal of the consent to marriage; in isolated well-marked cases, this may naturally be the case, as we shall see later on.

In the methods of investigation which we apply in order to differentiate by the examination for gonococci between the infectious and the non-infectious diseases of the uro-genital tract, we have to overcome the following difficulties.

Difficulty of diagnosis.—1. In the chronic cases there are almost always only very few gonococci present. It may, of course, happen that in chronic gonorrhœas there may take place owing to some accident (frequent and rapidly repeated sexual intercourse, irritation by alcoholic excesses, in women in association with menstruation) simultaneously with the increase in the inflammatory appearances, an increase also in the number of gonococci, but this is not absolutely necessary, and it is quite possible, in spite of severe inflammations of such a nature as to suggest a fresh infection, for the gonococci to remain very sparse.

Since there is not under such circumstances a diminution in the biological peculiarities of the gonococci, it follows that these non-multiplying gonococci which have apparently also been deprived of their power to cause suppuration, possess full virulence and also a capacity for producing suppuration, if transferred to some other mucous membrane.

2. But the gonococci are in chronic cases not only difficult to find on account of their scarcity—even in a large number of microscopical preparations it is possible for the few small heaps of double cocci, lying perhaps extracellularly or singly, to escape observation easily,—but also because in most cases of chronic urethritis there are also millions of other bacteria present, small and large bacilli, and also cocci, which naturally make the finding of the gonococci lying between and mixed up with them uncommonly difficult or even downright impossible.

3. Among these urethral parasites there are found occasionally diplococci which are remarkably alike to the gonococci, so that the point whether some kind of diplococci are really genuine gonococci presents sometimes very great difficulties.

If we possessed an absolutely specific staining-method, such for instance as the one for tubercle bacilli, the differentiation between gonococci and gonococci-like diplococci would naturally be much easier.

It has been asserted by some authorities that the gonococci change in regard to their forms and that they can assume quite uncharacteristic appearances of degeneration without losing thereby their capacity for multiplication and their virulence, making it in this way possible for gonorrhœa-producing bacteria to pass unrecognised on account of the absence of all their morphological peculiarities. I have never been able so far to satisfy myself about the existence of such forms of degeneration. It is true that gonococci are constantly perishing in cultivation-media and probably also on the mucous membranes of the patients, and that we come across all sorts of decaying forms. But then these have generally lost their power of multiplication also, and we have before us consequently harmless bacterial residua which are no longer capable of causing any infection.

4. The scanty gonococci present in a genital tract are not always accessible for examination, because they are not mixed with the superficial secretion employed in the preparation of microscopic specimens or cultivations. It is therefore part of the examiner's duty to discover all the hidden recesses into which gonococci may have crept and to subject the secretions contained in them to careful investigation.

Provocation.—In the case of men it is therefore necessary to examine not only the superficial secretion of the anterior urethra and that of the posterior urethra—if possible separately—but to endeavour also to bring to light the secretion situated in the crypts between the folds of the urethral mucous membrane, and to examine it. At any rate it is advisable by massage from the rectum to express the prostate and if at all possible, also the vesiculæ seminales. Careful search must be made for the existence of preputial and para-urethral passages, of fistulæ and small abscess-cavities. In special cases it may be necessary with the help of the endoscope to look also for gland-like epithelial swellings lying in the urethra and to subject their

secretion to examination, especially if it is possible by external palpation of the urethra to demonstrate anywhere more or less circumscribed infiltrations and nodules.

But apart from these out-of-the-way recesses in which gonococci may be situated, the latter may also find a location underneath the superficial epithelial layers, and possibly even in the uppermost parts of the connective tissue, so that a secretion obtained from the surface exclusively will not contain such gonococci lying latently in the deeper layers.

In women gonococci may lie hidden between the folds of the wide urethra; also, in the cervical canal, in deeper layers of the epithelium, finally in the body of the uterus and perhaps even higher up in the appendages, without there being any gonococci demonstrable in the preparations made with the cervical secretion. The rectum is also frequently the seat of a gonorrhœa without such symptoms as to attract the special attention of the observer to this complication. In addition, there are also to be taken into account the small mucous glands and particularly the duct of *Bartholin's* gland in the vaginal entrance.

Diagnosis by the aid of the gonococcus.—I do not propose to discuss here at length the question of diagnosis by gonococci. It is known that we make a diagnosis of gonococci from the microscopical picture and with a suitable staining:

1. From the form of diplococcus; that is, the microscopical specimen shows almost always two cocci lying like coffee-beans close to one another, very often not only as one pair, but in groups of two, four and eight pairs.

2. From the intra-cellular position wherever there are leucocytes in anything like abundant numbers. It must however be borne in mind, firstly that gonococci occur extra-cellularly also, and secondly that other bacteria may also be located intra-cellularly.

3. From the peculiar size. It seems to me superfluous to give here definite measurements. I should like, however, to recommend that a reliable specimen of gonococci, stained, of course, in the same manner as the preparation about to be made, be kept ready at hand for use as a test-specimen in

doubtful cases, with which to compare dubious preparations under the same power.

4. By a definite attitude towards the staining by *Gram's* method. Almost all the diplococci, eventually mistaken for gonococci, are distinguished from the latter by the fact that in applying *Gram's* staining method, they retain the dark violet colour, are not decolourised by the use of decolourising agents, and that they do not, if treated with counter-staining agents, take up the counter-stain. Gonococci, on the other hand, lose the blue-violet colour and take up the counter-colouration, whether the same be instituted with weak carbol-fuchsin solutions, Bismarck-brown or methyl-blue.

I am now in the habit of examining every case of chronic urethritis by means of *Gram's* method. It affords, in any case, from the very beginning, if there are any suspicious diplococci present at all, a much greater certainty whether we have to deal with gonococci or not.

With the technique of the method I am not concerned here. (See on this point, *Scholtz*, *Vorlesungen* p. 8.) There is only one thing I wish to mention: It is not by any means easy to apply the method, so as to obtain valuable results. Both the preparation of the specimens, as well as the technique of the staining demand the knowledge of a mass of details which renders a certain amount of practice indispensable!

On the utilisation of cultures for the verification of the gonococci or for differential diagnosis from diplococci, I will say something later on.

Experiments on animals are of no avail with respect to the question which interests us here, and require at any rate from a practical point of view no consideration at all.

So as to overcome the difficulties enumerated above, which stand in the way of a correct diagnosis, I adopt the following method of examination:

Survey of the method of examination.—The patient is asked to come for the purpose of being examined with the bladder as full as possible, and microscopical specimens are prepared separately from the anterior urethra, the posterior urethra and the prostate. The secretion from the

anterior urethra is obtained by smartly squeezing the pars anterior penis. After that, the entire urethra as far as the sphincter is thoroughly irrigated by repeated injections from a fairly large syringe holding at least 20 ccm., or better still through a thin catheter, introduced as far as the sphincter, which is attached to an irrigator containing a 3% boric acid solution; the irrigator is held up or suspended fairly high, and the washing process is continued so long as there are mucous or other particles contained in the irrigating liquid. The patient is afterwards instructed to pass a small quantity of urine which if there is no cystitis present is clear and transparent, but which carries along with it the flocculi, threads and mucous constituents situated on the mucous membrane of the posterior urethra. If the threads are large enough so that they can be fished out by means of a platinum needle, specimens are prepared from them. But if the threads and floccules are small, the liquid is centrifugalised thoroughly and the sediment thus obtained extracted for purposes of microscopy. This is followed by a careful massage of the prostate and seminal vesicles, which must, however, be carried out with due regard to an eventual endurance of pain on the part of the patient. Usually there is at once a secretion to be seen at the external orifice, from which specimens are prepared. After that the patient must empty the whole of the bladder, when the urine will contain the entire secretion which was pressed out from the prostate into the urethra. From this portion also specimens are prepared either by extraction or centrifugalisation.

For some time now we prepare the specimens on slides, as the whole manipulation and the staining can be done far more comfortably on them than on cover-glasses. Especially to those who have to examine every day a large number of specimens, it is of the utmost importance to be able to save the trouble of mounting the preparations in Canada-balsam and of arranging the cover-glasses. If the slide prepared with the secretion is dried after the completion of the staining process, there is nothing further to be done but to place the oil required for the oil-immersion on the slide and to immerse the lens direct into the drop of oil.

The first preparations made from the patient at his first visit, I examine as a rule by the simple methyl-blue staining method. (See the description of the various methods in *Scholtz's* work.) If gonococci are undeniably found to be present, the question of diagnosis is of course at once decided. If I find suspicious diplococci, I examine the specimens stained with methyl-blue, after decolourising them (in hot water), by *Gram's* method; or, what is more advisable, I repeat this examination by the latter method on fresh specimens prepared on a subsequent day.

If no gonococci are found or if the preparations show all possible sorts of other forms of bacteria in large numbers, I first wash out the anterior and posterior urethra most carefully with a solution of oxycyanate of mercury (1:60000) after introducing a catheter, or by *Janet's* method (perhaps, in the morning) and inject some hours afterwards (towards evening) into the anterior urethra a solution producing irritation and suppuration. As a rule I employ for this purpose a 3-5% solution of protargol, to which I add 5% of antipyrin, so as to reduce the subjective complaints to a minimum. The following morning there is then generally found an abundant secretion which is on the one hand purulent in character, and on the other free from the parasitic bacteria which inhabit the urethra and which render the finding of gonococci difficult.

Should there be no gonococci in this secretion either, the same process of irrigation and chemical provocation, is repeated after 2 or 3 days; or instead of the chemical provocation, a mechanical one is instituted either by vigorous expression and kneading of the urethra with a bulbous sound or by dilatation. The introduction of the sound presents at the same time the advantage of an opportunity to form an idea as to the dilatability or presence of localised infiltrations and painful spots. The sound is however not used only for the purpose of provoking an inflammation and suppuration by vigorously turning it about in several directions, but also for the immediate preparation of microscopical specimens. The thorough smoothing of all the folds, the squeezing-out of the crypts and pouches by the bulb of the sound filling the lumen of the urethra,

brings occasionally out some hidden gonococci. Preparations must therefore be made with the secretion adhering to the bulb of the sound and to the portion just behind it.

The idea underlying all these methods is, therefore, on the one hand to remove the superficial bacteria which impede the examination, and on the other to artificially transfer to the surface by chemically or mechanically produced inflammation, gonococci situated in the deeper layers of the tissues, by bringing them into the stream of leucocytes and serum. At the same time gonococci present in small numbers are, perhaps, caused to multiply and to grow by the aid of the greater nutrition-stream, thus rendering it easier to find them. Finally, gonococci, lying in hidden recesses, are mechanically transferred into the secretion and consequently upon the microscopical specimen.

The mechanical provocation produced by many others with the help of dilators has not shown to me that it possesses any special advantages. *Wossidlo* maintains, on the contrary, that clusters of gonococci situated in deeper parts can frequently be laid bare and set into motion only by such dilatation. Whenever I do use dilators, I am not satisfied with one single strong dilatation, but the instrument introduced is constantly screwed on and off, so that a repeated dilatation of the urethra is obtained while lacerations are, of course, in this way avoided.

The secretions obtained in the above-mentioned manner are, as already said, in every case examined most carefully with the aid of *Gram's* method.

Value of culture-method.—I do not, nevertheless, when the question of marriage is under consideration, neglect to make use of the cultivation-method, although I have not met with a single case where I have found gonococci—if they were present at all—by the cultivation-method only, and not also by microscopical examination. But as the possibility is not altogether excluded that a few scanty gonococci-groups may escape observation by microscopical preparations, while the cultivation-method offers a chance to multiply these scanty gonococci into such numbers as to render their recognition more easy, I consider it my duty to make use of this method as well.

In women the microscopical examination appears even to be attended with better results than the cultivation-method. *Baermann* has examined for gonococci by microscope and culture, the urethral and cervical secretions of 393 prostitutes. Of 143 gonorrhœas which were ascertained, only in 5 cases were gonococci culturally demonstrated in which they were not recognised microscopically. It is to be noticed, however, that of each case it was possible to prepare and examine microscopically only two specimens of the urethral and cervical secretion.

But on the other hand, about 25% of the cases in which gonococci were found microscopically, gave a negative cultivation result!

Besides, the cultivation-method is so devoid of simplicity and convenience that only those who are thoroughly familiar with it can make use of it to advantage.

In the first place there is a difficulty about the most suitable medium. In our opinion a really efficient medium is supplied only by liquids formed from human blood-serum, or derived from ascitic secretions, hydroceles or ovarian cysts.

All the more recent and "more simple" media are highly unreliable, or at least just as difficult to preserve and to prepare as serum-agar. We always employ with the best results ascites-agar ($\frac{1}{2}$ ascites-fluid, $\frac{1}{2}$ agar, 1% peptone. *Witte*.)

But to form an opinion from growing cultures is also not easy, especially since we know through *Thalmann*, *Wildbolz*, *Urbahn* and *Baermann* that ascites-agar is not the only agar on which gonococci will grow, and that the appearance of even those gonococci which have grown on the same soil, can be exceedingly variable.

The practitioner will therefore, at any rate, for the present, always regard the microscopical method not only as the most important, but also as quite sufficient for his purpose.

As regards the question how often examinations should be made, in order to consider oneself justified in expressing an

opinion, it is necessary to distinguish between two groups of chronic urethrites:

(1) If the urethritis has already existed for some time, perhaps for more than a year, and if it does not show a tendency to become worse in spite of repeated cohabitations and alcoholic excesses or similar causes, and if the secretion contains principally epithelium and mucus, it is according to my experience very probable that there are no more gonococci present. If in such cases, 3 or 4 provocations caused at intervals of several days, followed by 2 or 3 microscopical and cultural examinations of the urethral and prostatic secretions also show a negative result, I declare myself satisfied that there is no further risk of infection.

(2) If, on the other hand, the secretions disclose a comparatively abundant quantity of pus-corpuscles, if there is a pronounced tendency to exacerbations, associated with subjective complaints, the possibility is nearer at hand that this inclination to acute phenomena is due to the presence of latent gonococci. In all such cases it is necessary to examine the urogenital tract far more carefully, that is, considerably more often.

It is particularly important in such cases to establish further by most assiduous examination with the bulbous sound and with the endoscope whether any local processes are demonstrable in the urethra which can explain the acute inflammatory character of the secretions, apart from the presence of the gonococci.

I am on no account inclined to agree with *Oberländer*, *Kollmann*, *Wossidlo*, *Kromayer*, *Finger*, and others, that the presence of such acute inflammatory conditions or of pus-corpuscles is in itself a proof of the presence of gonococci, and that it is necessary to refuse the consent to the marriage of those patients who show filaments and urethral secretions only, because the latter carry pus-corpuscles in abundance. These phenomena are to my mind an indication that the respective cases particularly require most careful examination; but if the search for gonococci remains continually negative, I believe, on the strength of my experience, that I am able to declare

most categorically that the refusal of the consent to the marriage is unjustified.

From what has been said it follows that the whole method requires very much patience and very much practice. For this reason I particularly recommend that such cases should be entrusted to the hands of such practitioners who make this subject their special branch of practice. Although I am always advocating that every medical man should be taught in his student-days how to treat acute gonorrhœa efficiently from every point of view, and although I am opposed to the idea that the treatment of venereal diseases should form a specialty in itself, the estimation of these chronic cases of urethritis requires such special technicality and practice as cannot possibly be possessed by every practitioner, quite apart from the circumstance that not every medical man can have at his disposal the laboratory arrangements required especially for the preparation of cultures.

Post-gonorrhœic urethritis.—So far we have proceeded from the point of view of estimating the infectiousness of a patient who has formerly had gonorrhœa, according to the presence or absence of gonococci. But the question arises whether the numerous forms of bacteria present in almost every chronic (post-gonorrhœic) urethritis, or one of them, can also have pathogenic qualities and therefore be a source of infection to the married state. The question is the more justified, considering that there are in males non-gonorrhœal bacterial urethrites. Unfortunately this problem is so far not yet solved. It is true that in some diseases of the appendages which have been observed in women married to, or who have just married, men suffering from chronic urethritis, staphylococci and streptococci have been demonstrated in a number of cases. It is not, however, by any means established whether there was in these cases a mixed infection with gonorrhœa in which there remained in the pus, after the destruction of the gonococci, the other bacteria only, or an isolated infection by staphylococci or streptococci, as to which, again, it cannot be said whether it owes its origin to a contagion from the husband or whether it has been produced spontaneously, so to speak,

from staphylococci or streptococci contained in the vaginal secretion.

In any case, however, it is necessary to look into this point more closely. For just as there are, as mentioned, cases of non-gonorrhœic urethritis and epididymitis, so it is possible that there also are non-gonorrhœic diseases of the uterus and its appendages.

Chronic gonorrhœa of the wife.—The presence of chronic gonorrhœa in the wife is considerably more difficult to demonstrate than in the husband. I am convinced, however, that here also like in the case of the husband, the microscopical and cultural examination of the gonococci is the only means by which we can, in each individual case, decide the question of a still existing infectiousness. For in women also it is possible for gonococci to be present as yet notwithstanding the absence of all clinical symptoms, or, the other way about, for the gonococci to have disappeared long since in spite of the most pronounced post-gonorrhœal phenomena being still in existence. But I am also of the opinion that the gynæcologists should not go so far as to ascribe to every case of disease of the uterus and its appendages, without exception, which occurs in a woman married to a man who has had gonorrhœa, an infectious gonorrhœic origin. There are no doubt also other causes for the presence of such inflammatory processes, especially if the latter develop in connection with pregnancy and parturition. It must, however, be admitted that it is impossible to find a solution, in every case, of the problem how the disease originated in the wife, by examining the husband. In very many instances husband as well as wife do not present themselves for examination until after many years of married life, when the husband has, perhaps, long since been free from gonococci, though he may have been gonorrhœally infectious at the time he got married. Such cases must therefore be entirely eliminated with regard to the question how to judge these diseases of women which are of a suspiciously gonorrhœic nature.

The examination in the case of women has to take into account:

1. The urethra. Where there is an abundance of secretion, the preparation of the microscopical specimens presents no difficulties. I should like to recommend, however, for all cases the use of long-handled and blunted "sharp spoons" which can be thoroughly heated, for introduction into the urethra for the purpose of scraping off the most superficial epithelial layers, especially if the possibility is at all present that the patient has through micturition or expression discharged the secretion previously contained in the urethra.

With an abundant purulent secretion it is well to consider that in women also there are post-gonorrhoeic forms which carry gonococci no longer, and uro-gonorrhoeic urethrites.

If gonococci are really present, they lie here often extracellularly, embedded in mucus or vase-like on large epithelial cells.

2. The duct of Bartholin's glands. Even in quite chronic cases the same is frequently the seat of residual gonococci. If the opening shows the red macula described especially by *Sänger*, this clinical sign alone points to a gonorrhoeic remnant; but there are frequently gonococci in the expressed mucus though all clinical signs are wanting.

Similar importance should be attached to the large mucous glands surrounding, like a wreath, the orifice of the urethra.

3. The cervical canal. Here it is also advisable after the removal of the mass of mucus, which flows sometimes abundantly, to enter the canal with an instrument and to prepare microscopical specimens out of the substance lining the wall.

An examination of the vaginal secretion is of use only in quite young persons just married, as in adult women who have already frequently had sexual intercourse, the vagina itself is hardly ever the seat of gonorrhoeic processes. Of course it is possible for gonococci to descend from the uterus into the vaginal mucus; but then it is more to the point to subject the

cervix and eventually the uterus itself directly to an examination for gonococci.

4. An examination of the uterus itself becomes necessary in some cases where it is important to ascertain whether a gonorrhœic endometritis is present. Apart from the technical difficulties which every examination of the uterus involves, it is to be remembered that only in comparatively rare cases is it possible to apply any local treatment to the uterus direct. It may become necessary to establish the point if in spite of continued treatment of the cervical canal gonococci still continue to be present in the cervix preparations. In such cases it might eventually be best to discontinue the treatment of the cervix, if it is found that the body of the uterus has already become infected.

If in a case where gonorrhœa is suspected or if in the course of treatment no gonococci are found in the secretion from the cervix or uterus respectively, it is nevertheless always necessary to make another examination in connection with the menstruation period. Frequently one finds in such a case gonococci which have, so to speak, been provoked into action and which during the intervals between menstruation were too scanty to be recognised, or which did not even, perhaps, form part of the secretion.

5. As regards the rectum, its examination will be undertaken in every case of gonorrhœa of the genitals where there is some rectal irritation, so as to be on the safe side, especially where the patient is not excessively scrupulous about her personal cleanliness, and the discharge is very profuse.

What should be the attitude of the physician in practice?

1. In every case which presents a gonorrhœa that is not completely cured, a most careful examination must be undertaken.

2. Where gonococci are shown to be present or where their absence is not so conclusively demonstrated as to satisfy the physician's conscience that he is entitled to give his consent

to the proposed marriage, an energetic anti-bacterial treatment must be instituted, particularly of each affected part of the urethra (anterior and posterior) of the prostate, and of the paraurethral passages, with not too weak concentrated solutions, among which I place in the front rank the silver salts and the oxycyanate of mercury. The principle which underlies this line of treatment consists in keeping up the inflammation and suppuration by prolonged exciting action, in order to bring to light, on the one hand gonococci which might be present, and, on the other, to remove the same by gonococci-destroying remedies. The acute inflammation serves, further, to pave the way for the removal of the chronically inflammatory residues.

3. Should the marriage take place before the physician has fully satisfied himself as to the absolute innocuousness of the husband's condition, it is the duty of the medical man to permit condomatic conjugal intercourse only and to insist upon a continued observation and treatment.

4. Most scrupulous cleanliness and disinfection of the female genitals must of course be recommended. The physician must further make it his business to instruct the husband with regard to the symptoms of an eventual fresh infection of the wife, and to impress it upon him to pay attention to even the most insignificant signs and complaints.

It must be pointed out with the greatest urgency that notwithstanding all objections and protests on the part of the wife, an examination of the latter including a microscopical examination of the secretion must take place immediately, if suspicious symptoms of any kind make their appearance. For it is only the neglect of acute gonorrhœas which causes the endless misery that gonorrhœa has in its train, most particularly for the married women of the better classes.

5. Not infrequently there appears soon after marriage in men, who were before their marriage examined most carefully and on the result of that examination permitted to get married, a profuse suppuration which naturally causes them the greatest anxiety. It stands to reason that it is the physician's duty to make sure whether a diagnostic error on his part

has been committed or not, and whether there is still some gonorrhœa present after all, or whether we have before us an exacerbation of the chronic-catarrrhal process into an acute purulent one provoked by the frequent indulgence in sexual intercourse.

6. Where it is found that both husband and wife are infected they must both be subjected to most careful treatment—which is in by far the most cases, if begun soon enough, crowned with success¹—and warned not to resume conjugal relations, until a complete cure has been effected in both of them.

Extra-genital infections in adults hardly ever arise in connection with gonorrhœa. It is therefore as a rule superfluous to warn relatives and parents in the same way as it is necessary to do in the case of syphilis on account of the latter's infectiousness in families. On the other hand it is advisable to point out that insufficient cleanliness may cause indirect infection through the common use of objects soiled with the secretion, (towels, cotton wool, bathing-water) and that sexual contact alone, without accomplished intercourse, is also dangerous. Occasionally it may be necessary to call attention to the fact that the rectum can be the seat of a gonorrhœa.

II. Injury to conjugal fruitfulness through gonorrhœa.

This injury is caused either through the circumstance that the fulfilment of the conjugal duties, that is, the exercise of sexual intercourse, becomes impossible, or by the fact that in spite of normally executed coitus the husband is incapable of procreating or the wife of bearing children. Of course the two disturbances can also be present conjointly.

¹The frequently expressed opinion on the bad prognosis of gonorrhœa in females, or even on its incurability, applies only to the forms which have already attacked the uterus and appendages. Urethral and cervical gonorrhœas, however, can be cured comparatively easily and quickly, if they are treated early enough or treated at all. This is probably the case in prostitutes, when they are examined regularly and thoroughly, but to a less extent in private practice. (See *Neisser*, p. 199.)

Gonorrhœa plays a prominent part in both directions. As far as statistics are at all available, about 40-50% of all barren marriages owe their sterility to gonorrhœic diseases, either because the husband has lost the *potentia generandi* or *cœundi*, or the wife the *potentia gignendi*, in consequence of gonorrhœa.

1. Impotentia generandi due to gonorrhœa.

The *potentia generandi* of the husband can take effect only if a normally acting semen is introduced into the vagina or possibly the *portio vaginalis*, by means of the ejaculation intended for the impregnation of the ovum.

In spite of normal *potentia cœundi* disturbances in the *potentia generandi* can arise as a consequence of gonorrhœa in 3 directions:

(a) By the circumstance that the ejaculation-fluid contains no testicular secretion and that it consequently does not carry any spermatozoa which are absolutely necessary for impregnation—so-called azoospermia. Allied to it is the condition known as oligospermia.

(b) By the circumstance that the healthy and normally constituted semen is not discharged through the ejaculatory ducts into the urethra (aspermatism) or not transferred from the urethra into the vagina by a normally powerful ejaculation.

(c) By the circumstance that the existing spermatozoa, though they are present in normal numbers have lost the mobility required for the exercise of their function, (asthenospermia, necrospermia).

a. Azoospermia and Oligospermia.

Azoospermia and oligospermia are in the great majority of cases connected with a previous disease of the semen-conducting organs. Notwithstanding a complete retention of their function by the semen-producing testicles, the inflammation caused in the semen-conducting parts—epididymis and spermatic cord—by gonococci proceeding from the urethra leads in a remarkably large number of cases to a mechanical obstruction in the

flow of the impregnating testicular product into the urethra, either through cicatricial compression of the ducts or through a purulent dissolution and destruction of the whole epididymis, with or without external suppuration. The man becomes very frequently sterile if the semen-conducting passages on both sides are gonorrhœally diseased, in spite of complete retention of the *potentiâ cœundi* and in spite of the preservation of an abundant ejaculatory fluid coming from the *vesiculæ seminales* and the prostate.

Import and frequency of epididymitis.—With regard to the frequency of epididymitis we have no definite knowledge. It is true that most cases of epididymitis come under the notice of the medical profession, and are therefore available for statistical purposes; we cannot, however, compare the number of cases of epididymitis with a figure giving correctly the prevalence of gonorrhœa.

If we compare a number of statistics the cases of epididymitis fluctuate between 3.5 and 39.3% of the gonorrhœas. An average number computed out of very many statistics tabulated by myself gives the figure as 16.11%. But this is, perhaps, also too great, seeing that it rests principally on returns from hospitals and clinics. In all these institutions, however, the number of those admitted on account of epididymitis must naturally be disproportionately high if compared with the figures relating to out-patients' departments and private practice. A correct average figure is therefore, perhaps, contained in some statistics which I compiled in 1896 with the help of the medical profession of Breslau, and which on the basis of material collected fairly uniformly and probably with the same errors from among hospital and private patients of all sorts, gave the percentage of inflammations of the epididymis to the number of gonorrhœas observed as 8.9%.

It is very much to be regretted that a very important factor has received no consideration in any of these statistics, namely the manner in which the gonorrhœa had been treated before the appearance of the epididymitis. It is undeniable that the frequency of this as of all other complications of gonorrhœa depends very materially upon the method of treatment adopted,

and that it can be enormously reduced by an appropriate treatment of the gonorrhœa in its earliest stages.

The importance of azoospermia as a cause of conjugal sterility has been shown first by *Kehrer*, of Heidelberg. He found azoospermia in not less than 30% of the married persons who consulted him on account of sterility, as the sole cause of the latter. This figure has been confirmed from various quarters: *Busch*, *Fürbringer*, *Giacomini*, *Godart*, *Gosselin*, *Liègois*, *Lier-Ascher*, etc. I wish to quote especially *Simmonds* who examined the testicles of 1000 bodies with regard to the presence of spermatozoa. He found among them 33 cases of azoospermia, which he could trace to venereal complaints; of these 22 were undoubtedly of gonorrhœic origin. Taking the general calculation that of 1000 marriages 10%—or 100—remain sterile, the 22 cases of azoospermia caused by gonorrhœa would refer to these 100 marriages. *Fürbringer* found in 600 husbands of sterile women as much as 83.3% of azoospermia or serious oligospermia. Personally I have not at my disposal any reliable calculations, although I have examined very numerous cases. But I have always found, each time a husband consulted me on account of the sterility of the marriage—if there was no impotentia cœundi—that there was azoospermia, and, indeed, regularly after a previous double epididymitis. Vice-versâ, whenever I have examined the semen on account of an anamnesticallly established epididymitis, I have generally, though not always, found azoospermia present.

The danger of a double epididymitis and funiculitis is easily apparent. The frequency of double epididymitis—whether the two epididymes are attacked simultaneously or successively—is estimated to amount to about 7% of all the gonorrhœic diseases of the epididymis.

But one-sided epididymitis also deserves consideration with regard to the preservation of the procreativeness of the entire seminal fluid. In the first instance cases of azoospermia have been observed in one-sided epididymitis as well, and secondly, the danger of azoospermia is, considering the frequency of gonorrhœa and epididymitis, naturally by 50% greater in the case of every man who has already suffered the

loss of one testicle. And as a matter of fact, as *Jadassohn* has established, most cases of epididymitis lead to a loss of function on the affected side.

Some cases of one-sided epididymitis are however only apparently one-sided diseases. For the funiculitis which takes place on the one side without the epididymis being affected at the same time is surely as effective in impeding the passage of the semen as the epididymitis present on the other side; only it is not noticed so frequently and is therefore not registered statistically. In this connection also *Simmonds* has pointed out by his very careful anatomical observations how often the most insignificant pathological changes in the seminal ducts suffice to obstruct the passage of the testicular secretion. He found in the above-mentioned 1000 dissections 23 times stricture of the vas deferens. In 10% of these cases there was absolute azoospermia, in other words sterility.

On the other hand, double epididymitis does not always give rise to absolute sterility. *Benzler* found in 24 marriages, the husbands in which had gone through double epididymitis, absolute sterility only 10 times (41.65%). In 5 marriages (20.8%) there was relative sterility, and in 9 cases the circumstances were normal.

If we do not wish to accuse all these 14 wives of infidelity and of illicit intercourse with other men, we find that there was procreativeness in almost 60% of the cases in spite of the double epididymitis.

In 87 marriages with one-sided epididymitis *Benzler* found absolute sterility 16 times = 18.39%; relative sterility 10 times = 11.5%; normal conditions therefore 71 times. The procreativeness was therefore retained in 81.6% of the cases.

For comparison he took 363 marriages, of which the husbands, though they had had gonorrhœa in former years, had, however, escaped inflammations of the epididymis. They showed 10.46% absolute sterility, and consequently 89.64% retention of the procreativeness, that is, the conditions as to sterility corresponded to the generally accepted figure with regard to all marriages in which the husbands have a history of gonorrhœa.

Oligospermia.—Closely related to azoospermia is oligospermia, i.e. a condition of the spermatic fluid in which there are only very few spermatozoa present. As a rule the mobility of the spermatozoa is in such cases also impaired, so that by the combination of these two disturbances relating both to the quantity and the quality of the spermatozoa, the chances of the impregnativeness of the ejaculatory fluid are very much diminished, particularly if there are any conditions existing in the cervical canal of the wife which hinder in any way the entrance of the spermatozoa into the uterine cavity.

There is, however, also no doubt that husbands with such poor, short and thin spermatozoa have impregnated their wives, a fact which is of the utmost importance to the physician when called upon to express an opinion as to the prognosis.

As to the causation of oligospermia we are not very well informed. As a rule we must assume that so long as the semen-producing and semen-conducting organs of one side are functionally and anatomically normal, we cannot speak of a material diminution in the quantity of the semen or of a disturbance in the *potentia generandi*. Only when disturbances on both sides have so obstructed the passages that really only minute quantities of the testicular secretion can pass—and, as we have seen, this result can be achieved even by only comparatively insignificant anatomical changes—it is only then that oligospermia can be said to have made its appearance.

Finally, we must mention yet two disturbances in the function of the testicles, though they are only indirectly connected with gonorrhoeic conditions. It is possible for an atrophy of the testicular substance to arise in consequence of unsuitable treatment of an epididymitis—and formerly, when the application of firmly-adhering plaster bandages was a favourite method of treatment, such a result was far more often observed than at the present day—and further such an atrophy may also be caused by a hydrocele supervening in connection with a gonorrhoeic epididymitis; for gonorrhœa as such does not attack the testes direct.

b. *Aspermatism.*

By far more rarely than by the conditions just described, male sterility is caused by aspermatism, i. e. a complete absence of the entire fluid known as semen and consisting of the extracts of testicle, vesiculæ seminales and prostate.

But among the rare cases of aspermatism gonorrhœa again is the most frequent causation of the same, as gonorrhœal strictures lead to cicatricial closures and distortions of the openings or channels of the ejaculatory ducts, to such an extent that there is either no discharge of semen at all into the urethra or that the ejaculation takes place in a posterior instead of an anterior direction. Under other circumstances, too, very narrow strictures of the urethra can result in making the ejaculation impossible altogether or at least in depriving it of its shooting character so that it is replaced by a slow flowing movement which takes place after the cessation of the erection. In this way no seminal fluid at all or only very minute quantities of it reach the vagina or the neighbourhood of the portio vaginalis, conditions which are bound to impede considerably the union of spermatozoa and ovulum.

The fact that such strictures allow the urine to pass does not by any means prove that the spermatic fluid can also pass through them; the latter is much thicker and more viscous than the former, and besides, a most important factor in the whole process is that the semen should be swiftly expelled during the erection. But then, in the erected condition of the penis the strictures are apt to become still narrower than when it is relaxed, or, perhaps, to even close up altogether.

The exercise of coitus can take place quite normally in spite of complete aspermatism; and it is even as a rule accompanied by a feeling of ejaculation which gratifies the sexual desire. But there is no emission of semen. And it may also happen that violent pains are experienced in the region of the perineum.

If the strictures and cicatrices are so situated that the sperm, although it can pass from the ejaculatory duct into the urethra,

cannot proceed further into the anterior urethra, it is generally possible to demonstrate seminal fluid in the urine in corresponding quantities.

Finally it is possible for functional disturbances in the sphincter muscles concerned in the ejaculatory act, arising in connection with gonorrhoeic prostatitis, to lead to a perverse discharge of the semen into the bladder instead of anteriorly into the urethra.

c. Necropermia.

In addition to the above factors which can diminish or remove entirely the presence and quantity of spermatozoa in the ejaculation-fluid by mechanical means principally, there may arise pathological conditions which damage the spermatozoa, present perhaps in normal numbers, to such a degree that they become functionally incapable. But the most important quality for the vitality of the spermatozoa is their mobility.

What does this mobility depend upon? We have learnt chiefly through *Fürbringer* that the spermatozoa, while yet in the vesiculæ seminales, are immobile, and that from slumbering threads they become mobile living "sperm-animalculæ" only through the addition of the normal prostatic secretion.

The spermatozoa need therefore, in order to become fully capable to fulfil their function, the presence of a normal secretion from the vesiculæ seminales which contributes to the maintenance and preservation of the spermatozoa, and that of a normal prostatic secretion which makes them mobile. The addition of pus or blood, alterations in the consistence and in the reaction of the vesiculæ seminales caused by inflammation, and changes in the prostatic secretion the reaction of which is normally acid, can thus diminish or even destroy the mobility of the spermatozoa. In this way arise the conditions of asthenospermia and necropermia through hæmospermia and pyospermia, which, in their turn, are produced by vesiculitis gonorrhoeica seminalis and prostatitis gonorrhoeica.

Chronic prostatitis.—It would, however, be radically wrong to assume that this functional incapacity of the

spermatozoa occurs whenever such conditions prevail. The simple fact alone that even extreme degrees of chronic prostatitis with neutral reaction of the prostatic secretion are present in an endless number of cases in which the potentia generandi is retained, denotes that male sterility is not necessarily a result of these conditions. On the other hand we learn from these facts that it is our duty in every case where there is a certain amount of pronounced vesiculitis and prostatitis, especially where there is an alkaline reaction of the prostatic secretion, to examine the semen with regard to the mobility of the spermatozoa contained in it. A particularly important series of observations has been made by *Goldberg*, who has examined 22 married patients affected with prostatitis. Of these patients 17 had children, and 5 were childless. But in these latter cases, too, the chronic prostatitis could not be made absolutely responsible for the fruitfulness of the marriages, as there were other possible elements as well concerned in its causation.

In all probability these abnormal phenomena are not constant and permanent either, but variable, so that the semen is according to the stage, present at the time, sometimes functionally capable and sometimes "dead."

An unfavourable prognosis should therefore never be expressed after a single examination, but it is advisable to wait first and see the results of the treatment instituted which is in the case of prostatitis generally very hopeful.

2. Influence of Impotentia generandi on the married state.

As regards the establishment of the condition of azoospermia, oligospermia, and necrospermia, it must be pointed out in the first place that the purely clinical examination of the testicles, epididymes, and spermatic cords, prostate and urethra, supplies no conclusive information whatever; just as little knowledge can be obtained from the objective and subjective general conditions; decisive is solely and exclusively the microscopical examination of the semen.

Examination of the semen.—But the latter also is reliable only if carried out several times with semen obtained as soon as possible after ejaculation. Although in spite of all possible influences of the temperature and in spite of a long interval of time having elapsed between ejaculation and examination, the spermatozoa often retain their mobility, it is, nevertheless, possible for all kinds of accidents which cannot be explained in detail in every case, to annihilate in a very short time the mobility of the spermatozoa. It is therefore never safe to have seminal fluid sent for examination; in such a case the utmost that can be found out is the fact whether spermatozoa are present or absent, but not whether they are mobile or dead. For such examinations I recommend the preparation of dry specimens of semen; it is possible as I showed many years ago to make very good double stainings with carbol-fuchsin and methyl-blue, when it can be demonstrated at the same time where the single constituents of the spermatozoa come from—namely the red from the nucleus and the blue from the protoplasm of the testicular cell.

So as to obtain the semen for examination in as fresh a state as possible, I generally arrange with the husband to have condomatic intercourse at a definite hour and to let me have the condom, suspended in a wide-mouthed glass bottle carefully corked, immediately afterwards. In oligospermia and necrospermia it is always necessary, as I should like to emphasize once more, to subject the prostate and eventually also the vesiculæ seminales to treatment, before expressing an opinion on the prognosis. Not infrequently the constitution of the semen or of the spermatozoa respectively changes in a very short time as a result of proper treatment of the prostate (massage, and so forth).

If seminal fluid is brought to a physician for the purpose of being examined, he should be careful, especially in forensic cases, to certify that he has examined and given an opinion on the *specimen submitted to him*, seeing that substitution is in such cases well imaginable.

Where the examination has been conducted in the manner above described the physician will probably in most cases be

able to offer a sure opinion on the generating capacity of the husband.

The question is, however: Must he in every case without any reservation communicate the truth to his patient if he finds that this generating capacity does not exist? In all cases where the possibility of a *potentia generandi* cannot be altogether excluded, *f. i.* in oligospermia and in many cases of necrospermia, the physician will have to lay stress not only on the doubtfulness of the prognosis but at the same time also on the possibility of procreation. As a rule the patient is satisfied with such an assurance since he and his wife need not give up all hope of ever having children. The case is quite different in azoospermia! Judging from my own large experience, I should like to advise every medical man, for psychical reasons not to communicate to every husband in an unceremonious manner the sad fact of his generative impotence, but to institute several examinations in order to gain time for the purpose of studying the patient and his circumstances.

I need not think here of the possibility—it is known in literature—that the wife may, perhaps, become pregnant by another man, and that the married life may in this way suffer a serious blow, but will confine myself to the purely psychical factor that the necessity to renounce for ever the wish to have children depresses many men very keenly and may even make them psychically ill. It is in many cases not only a question of the human desire to see oneself reproduced in one's offspring and to procure to the wife the bliss of maternity which she so ardently longs for, but there are often entirely practical standpoints which arise, as *f. i.* the inheritance of family property, and so on.

Prognosis.—An endeavour must therefore be made in each particular case to become acquainted with the individuality of the patient in question and to decide accordingly whether the whole truth should be told, or whether a spark of hope should be left to him. The situation is to a conscientious physician, of course, a very difficult one, if the patient insists repeatedly on being medically treated. Personally I have never achieved the slightest good, no matter what treatment was

instituted (massage, plaster-bandages, damp and hot bandages, and even extirpation of the cicatrised cords). With regard to the possibility of stitching the spermatic cord directly to the globus major of the epididymis after removing the cicatricially altered parts, as suggested by *Martin* and *Bogoljuboff* on the strength of experiments, I have not been able to collect any personal experiences, so that I cannot say whether it is an operation which deserves, of course with the full knowledge of the patient as to its problematical result, to be undertaken or not.

The physician must further take into consideration whether the patient consulting him is as yet not engaged to be married or whether he is already a married man. In the first case it would mean the eventual prevention of a contemplated marriage, in the second principally the avoidance of an unnecessary and superfluous treatment of the wife. In many cases I have thought it advisable to tell the truth without any hesitation, where I believed it would be useful to the husbands to know that they cannot expect to have any family and that they were not under the necessity to amass a fortune for any descendants. This would enable them to live better and to indulge in luxuries such as travelling, etc., which would somewhat compensate the wife for the disappointment experienced through not having any children.

In very rare cases the physician may be in a position to give his consent to a marriage in spite of existing azoospermia, or such a marriage might even be desirable where for some reason or other (contracted pelvis, etc.) it is best for a girl to avoid pregnancy.

To what extent the wife of a husband who is affected with impotence of procreation should be enlightened, depends in the majority of cases upon whether it is the wife herself who comes to consult the physician—in that case she has, in my opinion, a right to be told the truth—or whether husband and wife present themselves simultaneously, when the husband becomes, so to speak, the patient of the doctor. In such cases I am of the opinion that the physician has no right, on his own initiative, to become a party to differences between hus-

band and wife. I am even not quite sure whether under such circumstances it is not the doctor's duty to guard the secret entrusted to him by the husband, in conformity with § 300 of the German Criminal Code.

The matter is far simpler in aspermatism, as in these cases the patient knows that there is a morbid disturbance. Here it will be necessary to deal more with the establishment of the causes of the aspermatism and the removal of the conditions giving rise to it.

The relations of female gonorrhœa to the sterility of the wife have, like the entire subject of gonorrhœa in relation to diseases of women, only within the last 20 years received proper consideration and been placed in their true light. The former under-estimation of the importance of gonorrhœa, was followed first, owing mainly to the work of *Nöggerath*, which created a sensation and gave rise to numerous researches, by an overestimation, which is now gradually being reduced to a correct appreciation. It must be admitted, though, that this correct appreciation is still sufficiently alarming, if we study the reports of gynæcologists as to the frequency of gonorrhœal affections which take place during married life.

I will, further down, refer to this point again. In this place we are interested only in the disturbances of the female fruitfulness which are caused by gonorrhœa.

Generally speaking gonorrhœa in itself does not render the women sterile, and is therefore as a rule not the cause of absolute sterility, although there do occur numbers of such cases. The danger begins usually with a labour, in connection with which it is immaterial whether the gonorrhœa existed before conception, or whether it was acquired during the pregnancy. It is only the puerperal state which supplies the opportunity for the gonococci, hitherto scanty and limited mostly to the urethra and the cervical canal, to multiply enormously during the first days after the labour, to ascend upwards and to give rise to diseases of the uterine cavity and Fallopian tubes, which result so often in sterility. Thus the condition

develops which is designated as one-child-sterility, a condition which can lead to the absolute sterility of a marriage, if a woman affected with this form of gonorrhœa before her marriage marries for the first time.

3. *Relations of gonorrhœa to the impotentia gignendi.*

(a) The disease of the cervical canal associated with swelling and the formation of mucus, causes a mechanical obstruction to the entrance of impregnating spermatozoa, and makes therefore conception impossible. Cervical gonorrhœas are uncommonly often overlooked, because, according to an average calculation made by *Baermann*, the cervical canal not infrequently—in about 46% of all female gonorrhœas—represents the sole place of infection, while in about 25% of the cases it is affected along with the urethra. The absence of all subjective complaints is the reason why numerous women know nothing about their being infected and why they do not seek medical advice and treatment.

(b) Where the gonorrhœic process attacks the mucous membrane of the body of the uterus, there ensues a more or less suppurative endometritis accompanied as a rule by distressing subjective complaints. Apart from the very severely-felt disturbances of the menstruation alone, it is just this disease which constitutes a frequent cause of sterility either because the implantation of the impregnated ovum is, to begin with, prevented, or because a premature expulsion of the implanted embryo takes place subsequently. Where normal labour does occur, such a diseased puerperal uterine mucous membrane is particularly subject to inflammatory exacerbations, which can lead on the one hand to puerperal infections, and, on the other, reduce still more the possibility of conception in the future.

(c) If the gonorrhœic endometritis which as a rule stops short at the ostia of the Fallopian tubes attacks the tubes after all, the possibility of pregnancy in the future, though considerably diminished, is not excluded entirely, as a cure may yet take place. Usually, however, this relatively favourable course

of the tubal gonorrhœa is not achieved; on the contrary, there ensues a formation of larger accumulations of pus in the tubes, followed by adhesions and obliterations of the lumina, and an affection of the ovaries and peritoneum. The ovaries embedded in inflammatory infiltrations and adhering to the pelvic wall become unfit for ovulation, and permanent sterility thus results. The latter is incurable even if all the acute symptoms disappear from the genital tract, and there is no sign whatever left of gonorrhœic processes, and of course, of gonococci.

Frequency.—As regards the frequency of female gonorrhœa as a cause of female sterility, there are quite a number of statistics contained in literature; few of them, however, and especially the older ones, are perfect, partly because the diagnosis of gonorrhœa rests on purely clinical symptoms, and often on the fact only that the husband had had gonorrhœa, without any reference to the presence of gonococci, and partly because it is not always taken into consideration sufficiently how often in sterile marriages where the wife has been infected with gonorrhœa, there were at the same time conditions present in the husband, which would, perhaps, in themselves be enough to explain the sterility, even if the wife had not been attacked by disease.

I will therefore leave out of account the numerous, though to some extent highly important and valuable communications of *Nöggerath*, *Glünder*, *E. Schwarz*, *Kehrer*, *Kleinwächter*, *Grünwald*, *Caspary*, *Chrobalk*, *Sänger*, *Zweifel*, *Lohmer* and *Oppenheimer*, and will reproduce in greater detail only the very carefully prepared researches of *Liehr* and *Ascher*. But in so far as I have been able to form an opinion on the statistics available, I feel inclined to agree with *Bumm* who attributes about 30% of all cases of primary sterility of women to gonorrhœic infection, and who perceives the main danger of gonorrhœa with regard to the increase of the population principally in the creation of secondary so-called one-child-sterilities.

4. *Disturbances in the potentia cœundi.*

The disturbances of the potentia cœundi of the husband caused by gonorrhœal diseases are more rare than the condi-

tions of impotentia generandi just described. We can distinguish two groups:

(a) Disturbances in the potentia cœundi produced by local processes, (b) impotence caused by general conditions depending, of course, in the last instance on a gonorrhœal disease.

Among the local causes are included all those which lead to disturbances in the power of erection. They arise through peri-urethral inflammations and suppurations either because the latter transform the entire loose connective tissue of the penile skin into a rigid and firm callosity, or because the processes invade the corpora cavernosa and cause in them more or less extensive destructions which in their turn heal with the formation of cicatrices. But, if in the place of the normal erectile tissue, centres of connective tissue form, a normal uniform engorgement and consequent swelling of the one or both corpora cavernosa is no longer possible; the erection takes place therefore in a curved manner or not at all. Generally these processes occur in the acute stages of gonorrhœa, more rarely in chronic cases, and at any rate in connection with strictures.

Importance of chronic prostatitis.—As locally caused forms of impotentia cœundi are regarded also the forms emanating from chronic posterior urethritis and chronic prostatitis. If an inflammation of a somewhat serious nature develops in the deeper layers of the mucous membrane of the posterior urethra, — in which case an affection of the caput gallinaginis becomes unavoidable, — and also in the prostatic structure, symptoms of irritation of all kinds inevitably appear in consequence of the exceedingly great amount of nerve-tissue present in these regions, which lead to disturbances of micturition as well as to disorders in the sexual function.

The hyperæmia and tumefaction accompanying the erection create in the already inflamed tissues sensations of pain which eliminate all pleasurable feeling and which often enough induce the patients to abstain from cohabitation on account of the painful character of the erection and ejaculation.

The chronic inflammatory process in the urethra posterior and in the prostate manifests itself frequently not exactly in

the shape of severe pain, but it leads reflexly to irritative symptoms which produce at the attempt of coition such a rapid ejaculation that in spite of powerful erection before the coitus, the latter becomes impossible through the ejaculation taking place before the immissio penis ("irritable weakness"), or is prematurely completed immediately after the immissio on account of the rapid ejaculation. This alone diminishes the chances of impregnation. Moreover, in such short and interrupted intercourse a certain amount of gratification of the libido may be experienced by the husband, but not by the wife, a circumstance upon which the chance of impregnation often apparently depends.

Prostatorrhœa.—The inflammatory processes of the pars prostatica lead, further, very often to relaxed conditions of the manifold muscular apparatuses of this region, and thus there arise through atony of the ejaculatory ducts forms of prostatorrhœa, of false, or eventually also of true spermatorrhœa; conditions which are as a rule designated as mixtion-spermatorrhœa and defæcation-spermatorrhœa. In themselves these symptoms are usually of no consequence. But in practice it is often found that it is just these "losses of sperm" which give rise to severe psychical and hypochondriac troubles, to apprehensions of diseases of the spinal cord, and such like.

In an exactly similar manner act as a consequence of local irritations in the prostatic part, emissions of a morbid character. Their injurious influence on the virility can also manifest itself in two ways. In the first place when they are very frequent they conduce purely objectively to a weakness of the body and especially of the nervous system. Besides—and this is probably oftener the case—they form the starting-point for sexually-neurasthenic conditions through the exaggerated importance which the patients attach to their loss of semen. In this way, however, with the anxiety and constant worrying over every symptom and every sensation, a new factor is created which is certainly apt, more than any other, to bring about long-lasting or even permanent impotentia cœundi, the more so as in many cases there is in point of fact a certain objective

weakness of the erection present. If in addition to all these abnormal phenomena accessible to observation, there are also subjective symptoms of a nervous and hyperæsthetic nature proceeding from the posterior urethra and the prostate—and these subjective symptoms are always very keenly felt on account of their constant presence and nagging character allowing no intermission—there develops finally a combination of symptoms of general sexual neurasthenia which is capable of bringing on most serious diseased conditions. How often in such cases the real gonorrhœic and post-gonorrhœic morbid conditions resuscitate a, perhaps, only latent neurasthenia, aggravate one which is present in a moderate degree, or occasion it primarily, whether the impotence is the cause or the consequence of the neurasthenic *ensemble*, it is not always possible to say with certainty. One has certainly often the impression that the patient who is neurasthenic to begin with, localises his complaints in this sphere particularly; on the other hand I believe I have often satisfied myself that individuals who are originally in perfect health can develop into severe neurasthenics through their chronic post-gonorrhœic conditions in the posterior urethra and in the prostate, if there are light disturbances of the virility present and the question of marriage is beginning to engage their attention. But that such general neurasthenia can from the very beginning constitute a factor leading to "psychical" impotentia cœundi, does not require any explanation, especially in the case of men whose virility was before also not very strongly developed. Masturbation and long continued excesses in venere can also in so far play an important part, as they either contribute in fact to the diminution of the potency, or because they create a fear of the injurious consequences of the youthful transgressions, thereby acting paralytically on the sexual function.

Gonorrhœal neurasthenia.—We can also with perfect right speak of gonorrhœal neurasthenia. The acute gonorrhœa is succeeded by a chronic inflammatory irritative stage with special participation of the mucous membrane of the posterior urethra, caput gallinaginis and prostate.

These local inflammatory phenomena can, in conjunction

with more or less marked subjective complaints, lead to disturbances of the erection and ejaculation.

As a rule however there also supervene soon general, one might almost say psychical, alterations, caused partly by the constant and sometimes dreadfully wearisome subjective complaints in the affected regions and partly by the observation that the virile power is considerably diminished. To this is moreover added the anxiety that the uncured gonorrhœa may have also other injurious consequences for the patient himself, or for the wife and offspring.

The psychical change thus effected becomes itself a new and independent factor, which disturbs and reduces the virility further still. It is well known that even in quite normal and healthy men the potency may suffer temporarily and become lost for a time when a doubt arises as to one's virile power. Now, if such a doubt happens to be justified by a passing disease and confirmed by other factors (masturbation during youth, false descriptions in works pretending to offer advice and enlightenment, etc.) one can easily understand the importance of the psychical element in the whole of this question.

Thus we see that in the great majority of people in whom somewhat marked conditions of impotentia cœundi appear in connection with chronic gonorrhœic urethritis, a systematic separation of the local causes from those acting generally is not possible. Especially if the conditions have existed for some time, it is often not even possible to find out whether the patient is complaining of local troubles and of impotentia cœundi because of his neurasthenic general conditions, or vice-versâ whether the local complaints have given rise to the impotentia cœundi and to the psychical depression associated with it.

Prognosis and treatment.—However, it is my opinion that it is advisable in all these cases to ascertain and treat with the minutest care and persistence the local conditions, of course, with due regard to the general condition and the due application of all the remedial measures influencing this general condition. The chances of success are naturally the greater the earlier the treatment can be commenced, that is, the less the nervous disturbance has been allowed to shape

into an independent ailment and to become the principal factor influencing the virility. I even consider the treatment of chronic conditions of the posterior urethra and of the prostate associated with such symptoms an extremely grateful field, and know from experience that it has been possible in a large number of cases by treatment—and if, perhaps, not by treatment, at any rate by the removal of the local symptoms—to remove the disturbances in the sexual function and thereby those forms of impotence which arise only through psychical influences in a round-about way.

III. Injuries to the family happiness.

In addition to the gratification of the sexual desire and the procreation of healthy descendants, we have mentioned as one of the objects of marriage the permanent cohabitation of the two individuals in question who desire in this way to create a household and a family, and who are imbued with the hope that they will by means of this fellowship render their lives happier and freer from cares.

But how easily can the happiness of a family be disturbed or destroyed through the absence of that blissful motherhood which the wife so ardently longs for, through the sexual non-gratification of the wife in impotentia cœundi of the husband, through continued illness and severe infirmities such as are caused in men by serious post-gonorrhœic sexual neuropathic conditions and in women by the dreaded diseases of the appendages? Not only the individual affected loses all joy in life, but the happiness of both partners and of the whole family is destroyed, and often enough there appears along with the disease a diminished working ability of the bread-winner and consequently a severe economic depression in the family.

Disease of the wife.—This fate naturally hits the hardest those families which are poor, especially where the wife is compelled through the insufficient earnings of the husband to participate as bread-winner in the support of the family. If the wife who is attacked by gonorrhœa were at least in a

position to take care of herself from the beginning of her illness, she might, perhaps, escape a long duration of the same. But as it is, she is obliged to work, and in this way there accumulates a succession of sickness, poverty and misery. For though in most cases gonorrhœa of the urethra and the cervix is of little consequence, the disease attains an enormous significance once it attacks the inside of the uterus, particularly as medical treatment is then almost out of the question. In spite of incessant endeavours to annihilate by active interference the gonococci producing the disease and thus to remove the suffering, most gynæcologists on the strength of their experiences favour the view that nothing is wanted but the best possible nursing and rest in bed, and that an expectant attitude offers the safest and quickest prospect of success. But it is exactly the poorer classes of women with whom we are dealing now who are least able, on account of the necessity they frequently are under, to work and thus to contribute to the maintenance of the family, besides looking after the interests of the household without any assistance, to carry out the medical order and to give themselves the necessary rest in bed which may have to last for weeks and months. Thus it is no wonder that most serious and even dangerous conditions develop in these women far more often than in those who are better off, conditions which lead on the one hand to sterility—a result which causes not the least keen disappointment—and which, on the other, often render serious operations necessary. These operations must in such cases be looked upon not merely from the medical, but also from the economic and social point of view generally, as the best solution of the problem, since the operative removal of the organs affected with disease and causing the state of infirmity is followed most surely and most quickly by rehabilitation to health and the re-appearance of the ability to work. Frequently, however, this comes too late, and the family is already ruined. Where the wife of a poor working-man, who is as a rule the only person that looks after the household and the comfort of the husband, is ill, miserable, depressed, nervous and bedridden, or where she must spend weeks and months in the hospital, the temptation of the husband to prefer the

conviviality of the public-house to the cheerlessness of his own home, and to seek the company of other women, is too great not to cause many men to succumb to it.

The great pecuniary cost occasioned by the illness of the wife must also be borne in mind.

If we think, further, of the fresh infections acquired only during married life, we have to take into consideration—apart from the danger of infection run by the wife—the complicating diseases of male gonorrhœa which exclude the possibility of following one's employment sometimes for a long period, such as affections of the epididymis, of the prostate, joints, heart, etc. Happily these complications and metastases heal as a rule entirely, but there still remains too often a group of chronically diseased individuals and of individuals who are permanently injured in their physical productiveness; the more so, as some married men do not carry out the treatment carefully enough and do not look after themselves properly, partly in order to conceal their illness, and partly on account of their "troubled conscience."

Of no considerable importance is the danger of a shortened life-duration in consequence of post-gonorrhœic diseases, but its occurrence is possible in severe strictures of the male urethra and in diseases of the bladder, and of the kidneys due to them, in post-gonorrhœic abdominal diseases and rectal ulcerations in women, and in gonorrhœic endocarditis.

Nothing is known about an hereditary transmission of gonorrhœa to the offspring, but against that we are only too well acquainted with the conveyance of the maternal gonorrhœa to the conjunctiva of the child during the labour process.

Blenorrhœa neonatorum.—It does not require very many words to show that these blenorrhœas must partly on account of the severity of the disease itself and partly on account of the risk of blindness to which the affected eye is subject, be a source of considerable anxiety to the parents, especially as here also the disease of the child can be traced to the parental illness, brought about more or less through the parent's own fault. How often does it happen that only with the occurrence of this sad calamity the guilty party becomes

conscious of the havoc caused by pre-nuptial and extra-nuptial intercourse and by the sexual diseases almost inevitably resulting from it!

Though the number of cases of blindness due to blenorrhœa neonatorum is still alarmingly large—statistics of blind-asylums show that at least 25% of the cases of blindness are as yet caused by gonorrhœa—it must nevertheless be admitted that owing to *Credé's* method this form of the disease has lost much of its former dreadfulness. The fact is that in all the maternity hospitals in which *Credé's* method or one similar to it is adopted, blenorrhœa neonatorum is practically never seen. Unfortunately, however, the procedure is, at least in Germany, not obligatory and a total extermination of blenorrhœa is therefore for the present out of the question. In Breslau f. i. *Herrmann Cohn* was able on the basis of a very careful statistical calculation prepared with the help of all the local medical men, to establish that as late as in the year 1896, 300 cases of blenorrhœa occurred, i.e. 25 per 1000 new-born children. Terrible as this figure is—if we think that the disease might easily have been averted if *Credé's* method had been adopted—it is on the other hand a valuable indication as to the number of unrecognised and untreated cases of gonorrhœa which are still present in married women, and perhaps also in their husbands.

These figures form a welcome argument on the dangers of gonorrhœa which can be used against those who maintain even at the present day that gonorrhœa is a harmless affection requiring but little notice.

Accidental infections in the family.—In addition to the gonorrhœal infection of the eyes of new-born children we have to mention also the cases of vulvo-vaginitis in little girls which are brought about by an accidental conveyance of secretion from the mothers to the children, either through the use of common objects or through the occupancy of the same bed. Although such familiar infections are not exactly very numerous, each one of these infantile infections is highly to be regretted (especially as even the most careful treatment achieves here success but very slowly) because we

must always say to ourselves that we are in the presence of quite innocent victims of avoidable diseases.

I conclude herewith the enumeration and discussion of the dangers arising to the married state from gonorrhœal disease. I should only like to call attention to one other point, though it is one rather of a "human-nature" aspect.

The whole situation, comprising on the one hand the above-mentioned disturbances in the *potentia generandi* and *cœundi* and the illness and incapacity for work of the husband himself, and on the other the disease of the wife and of the children, is rendered more keen and more bitter by the knowledge, which is very often not absent, that all this misfortune of the married state, that all this non-realisation of the hoped-for bliss on the strength of which the marriage was entered into, is in the last instance due to a disease which could have been avoided.

Question of guilt.—The extent to which "guilt" and "wrong" should be imputed must of course vary from case to case.

There is certainly no excuse whatever for those who marry with the knowledge that they are infected with the disease, or for those who become infected after marriage and who continue nevertheless to practise conjugal intercourse.

No less censure is deserved by those who though informed of the possibility that a chronic catarrh which has remained behind as a result of a former gonorrhœa might be infectious, do nothing to obtain in any way an assurance of their own innocuousness. In fact, such men often avoid a medical consultation for fear that they will be told the, to them, unpleasant truth that they really ought not to marry, and they prefer to let misfortune overtake them—an example indeed of unaccountable frivolity.

Morally excusable are those who marry in full ignorance of the possibility that any danger of infection can proceed from them, and also those who decide to get married after having obtained all information from, and the consent of, the medical man who has examined them. If severe consequences appear in them nevertheless, or if an infection is transmitted by them, they are at least free from the reproach of gross

carelessness, though they become the cause of the conjugal unhappiness.

IV. *Statistical conclusions.*

With regard to the prevalence of gonorrhœa among the two sexes, in so far as we have any information at all, I have made some statements in a previous passage. These show beyond doubt that the distribution of gonorrhœa among females—of course, with the exception of prostitutes—is very considerably less than among men.

It is consequently the husband who introduces gonorrhœa into the married state in an absolutely by far greater number of cases than the wife, and who is generally responsible for the injuries caused by it.

A very considerable number of the women who practise sexual intercourse before their marriage, enter the latter, no doubt, in an infected condition; for apart from the difficulties encountered in the endeavours to cure female gonorrhœa it is to be remembered that those women who are in the habit of indulging in sexual intercourse before they are married and who are thus liable to become gonorrhœically infected, generally belong to a class of people who are on a lower intellectual level and from whom it is hardly possible to expect that they will devote prolonged rest in bed involving loss of wages, and such minute attention to details as is required, in order to bring their illness to a definitely satisfactory conclusion by suitable treatment.

Statistically we possess very little information as to the frequency of gonorrhœic diseases among men and women entering the matrimonial state,¹ but we can draw approximate conclusions from the following statements:

¹I have found only one observation in literature in a work by *van Schaik*. The author has examined with respect to gonorrhœa 65 married women belonging to the better classes. Unfortunately he has examined microscopically the vaginal secretion only, which he has obtained by scraping it off the mucous membrane, but not the secretion from the urethra and the cervix. Signs of acute gonorrhœic infection were found in only 3 cases:

Frequency of male chronic gonorrhoea.—

1. What do we know about the frequency of male chronic gonorrhoea which is, as we have already several times emphasized, the most frequent cause of the infection proceeding from the husband? *Nöggerath*, who, already in 1872, was the first to point out the importance of gonorrhœal infection to the married state, made the assertion that of 100 men at least 80 had had gonorrhœa before they were married, and that of these again, 90% had entered married life with their gonorrhœa uncured.

This assertion is fortunately exaggerated, as has been demonstrated subsequently by examinations made on the basis of the presence of gonococci. The first researches pointing that way I communicated myself in 1885 at the Naturalists' Congress in Strassburg. I then found among 143 examined cases 80 with gonorrhœa of a still undoubtedly infectious character, that is, 54%. This percentage is, however, doubtless of just as little use as a general guide for the infectiousness of chronic urethritis, as the communications recently made by *Fritz Meyer* from *Rosenthal's* laboratory, on the strength of culture-experiments. The reason is that in the material which we both used there are included too many cases relatively fresh yet; besides, the polyclinical material which is recruited from the poorer classes contains too many cases of chronic disease brought about through sheer recklessness and insufficient treatment. We obtain thus a picture of the serious danger which protracted and chronic gonorrhœa causes to the married state, but these conditions are not an absolute criterion of the dangerousness of marrying-men (especially those of the better classes) who have once had gonorrhœa.

A different tale is told by the figures given by *Brauser* and *Scholtz*. *Brauser* examined the morning-urine of 300 patients picked out at random from among the patients attending at

4 made anamnestic statements with regard to former diseases. Gonococci were found in 17 cases = 26%. Sometimes the gonorrhœa was not discovered before a second or even a third examination was made. These results are certainly unreliable, as apart from the absence of the urethral and cervical examination, many of the women had used a syringe shortly before the examination.

the Munich clinic for other complaints than diseases of the sexual organs. Though he found in 163 patients, that is, in more than 50%, leucocytes-containing filaments, and in further 83 patients, equal to 28%, mucous and epithelial floccules, he found gonococci only 10 times.

Scholtz made a similar investigation in 100 patients attending the polyclinic for skin diseases and ascertained chronic urethritis in more than 20% of them. He thinks, however, that judging from his own observations and from those of others, genuine chronic infectious gonorrhœa can be admitted only in about 10% of all chronic catarrhs of the urethra. I am inclined to favour this view, if we take into regard the marrying-men of all classes. The lower classes are however sure to be represented to a greater extent. Unfortunately in young married working-men sub-acute forms of the disease still appear very often, and as to fresh infections acquired during married life, they are alarmingly numerous.

For the rest let me repeat what I have said above in detail. No statistics can be of any use in judging a given individual case, no matter how careful and exact they are. The point is, in fact, to find out into which statistical group the individual in question belongs. Everyone must therefore be examined most carefully.

Frequency in women.—Gynæcologists also have attempted to establish the frequency with which they can demonstrate gonorrhœic infection in their material.

Sänger found in his private and polyclinical practice 11.5%; on another occasion after a particularly careful investigation 18%; *Zweifel* in his private practice 10-11%, *Martin* 28.8%, *Oppenheimer* 27%.

Pregnant women were examined by *Oppenheimer* who found 27% with gonorrhœa, by *Schwarz* who found 12.4%, and by *Lomer* who found 28%.

Unfortunately there is not in these statistics a separation between the married and the unmarried, and none according to the rank or position of the persons examined, though just such data would be of the greatest importance for the selection of the necessary prophylactic measures.

I do not propose to deal here with the special frequency of the diseases of the appendages in women but should like to refer the reader particularly to the work of *F. Schenk* in which will be found a recent compilation of the literature and material on the subject.

With regard to gonorrhœa as a cause of sterile marriages three points must be taken into consideration separately.

1. How often is the husband only the cause of the sterility without an infection of the wife taking place?

2. How often is the gonorrhœic disease of the wife the cause of the sterility?

3. But then, how often is the husband responsible for this gonorrhœic infection of the wife, that is, how often is the husband ultimately responsible for the sterility of the marriage?

I will quote here only the two excellent statistics supplied by *Lier-Ascher* from *Prochowski's* clinic, and by *Schenk* from *Sänger's* clinic. I want only to emphasize that it was *Kehrer's* merit to have pointed out first in what an enormous percentage of the cases it is not the wife but the husband, and the latter, again, on account of his gonorrhœic disease, that is the cause of the sterility of the marriage. I only just wish to mention also that *Vedeler* ascribes the sterility to the fault of the husband in 70% of the cases, *Schuwarski* in 40.8%, *Olshausen* 50%, *Rosthorn* 40%, *Chrobak* 34%, etc.

Only such examinations can assist us in answering the 3 questions enumerated above, in which both husband and wife were examined.

Lier-Ascher found:

- ad. 1. In 132 married couples thus examined, among the husbands:

42 equal to 31.8%, with azoospermia,
11 equal to 8.3% impotent.

- ad. 2. 41 had infected their wives with gonorrhœa, consequently,

- ad. 3. the ultimate responsibility of the husband for the sterility is to be reckoned as 71.2%.

In addition to these 132 women, 95 other married women were examined on account of primary sterility. Among them were 53 suffering from gonorrhœa. The examination of the 95 respective husbands had to be omitted for various reasons.

Gonorrhœically diseased were therefore among the entire number of $132 + 95 = 227$ primarily sterile women, 41%.

A second series refers to 197 sterile marriages due to the acquired sterility of the wives. If 48 cases of coitus reservatus are deducted, there remain 149 marriages. Among these the fault lay on the husband's side in 37 cases = 24.9%, (2 cases of azoospermia, 35 times gonorrhœic infection of the wife.)

Schenk reports from *Sänger's* material 110 cases where both husband and wife were examined. He found:

ad. 1. Sterility, caused by impotence, azoospermia and oligospermia, 51 = 46.4%.

ad. 2. Transference of the gonorrhœa to the wife, 14 cases = 12.7%; therefore,

ad. 3. Sterility, effected through previous disease of the husband in 59.1%.

In 287 cases of primary sterility the wives only submitted themselves to examination, and in these gonorrhœa was found to be present 107 times, that is, in 34.8% of the cases. No less than 79 of these women (25.1%) had already diseased appendages. In 21 cases of secondary sterility, gonorrhœa was 9 times the cause of it.

V. Prophylaxis.

But is it not possible to avert all these serious injuries which gonorrhœa causes to the married state?

How the question of the danger of the infectiousness is to be decided I have already described above in detail, and shown that as a matter of fact our present examination-technique is so much improved that it is possible to ascertain almost without any doubt whether a man or woman is still capable of conveying gonorrhœal infection or not. The point is therefore

that both the medical profession and the public shall make use of this possibility as frequently as circumstances will allow. There is, indeed, no doubt that the beneficial consequences of this proceeding are already making themselves felt at the present time. As far as we medical men can judge from the number of male individuals who consult us for the purpose of obtaining a consent to their marriage, and from the solicitude which men begin to devote to the treatment of their gonorrhœas, the number of those who enter the conjugal state with the disease uncured must already be considerably smaller than was the case 20 or 25 years ago. In this way, too, there is a diminution in the number of those cases of gonorrhœa which appear to us to be the saddest, namely those in young married women. Among the poorer classes, certainly, the dangerousness of gonorrhœa is not yet recognised; the men particularly are under the impression that as soon as the subjective symptoms have been removed, careful treatment is no longer necessary. Of course, such recklessness finds its revenge not only in the spread of gonorrhœa among the women who have extra-conjugal intercourse with these men, but also in the infection of the girls who get married to them. It would almost seem that the better plan to solve the problem would be the dissemination of the necessary information as to the danger of sexual diseases and of gonorrhœa specially, not so much among the men as among the women. Perhaps the knowledge of the risks which not only syphilis but gonorrhœa also has in its train, would help to deter many women from illicit intercourse as much as is done nowadays principally in the case of most girls by the fear of becoming pregnant.

As to the attitude to be adopted in the presence of men who exhibit an *impotentia generandi*, I have already dealt with it above. It would certainly not be a difficult thing to find out almost every one of these cases, which are in reality not suited for the married state, if all the men contemplating marriage would only submit themselves to a proper preliminary examination. As long as this is not done, we may take it for granted that a good many men will in spite of their azoospermia or necrospermia, get married in the belief that they

are able to do full justice to all their marital obligations; for very few indeed know that it is possible for the *potentia cœundi* to exist unimpaired notwithstanding a destroyed *potentia generandi*!

Doctors are, however, frequently consulted on account of misgivings with regard to the *potentia cœundi*. But nothing is more difficult than to offer appropriate advice in this direction, unless one takes up the drastic standpoint to refuse one's consent to the marriage in every case which presents even nothing more than a diminution of the virile power.

It will therefore be necessary to take cognisance of all the factors which apply to each individual case and to decide accordingly. These factors are:

1. The age of the patient.
2. His general physical condition especially the presence of nervous and neurasthenic tendencies or of already developed "psychical" disturbances.
3. The kind and degree of an already existing disturbance in the virility.

In this connection there are to be taken into consideration not only the purely physical conditions, but also the purely psychical elements which influence the sexual life and the virility of every man. It would also, of course, be of especial importance to know the female individual with whom marriage is contemplated and to subject her to a close observation where such a procedure is possible, since the charm proceeding from the woman plays an eminently decisive part in exciting the desire and virility of the man. There is further to be considered the variable sexual requirement of females, and perhaps local anatomical conditions of the female genitals which may render cohabitation with a man not in possession of perfect virility difficult or impossible.

It would certainly be wrong in all such doubtful cases to prohibit the marriage straightway, for often marriage is just the factor that makes the men healthy again. Often enough the result is in spite of a somewhat reduced virility a happy married life, not only for the husbands but also for the wives.

Finally, it is to be remembered that the very cases of post-

gonorrhoeic disturbance of the *potentia cœundi* are very frequently amenable to treatment, since they are caused by local conditions, and that a refusal of the consent to the marriage should never be pronounced before a careful therapeutic attempt has been made.

With regard to women, the question of consent to the marriage resolves itself really into the ascertainment whether a previous disease of the appendages should be regarded as an obstacle to matrimony or not. Of course, the marriage of a woman, like that of a man, who is affected with a form of the disease which is still infectious on account of its gonococci-carrying nature is out of the question, but on the other hand gonorrhœa which has not ascended, hardly ever causes any disturbances which need be taken notice of in connection with the subject of marriage. Here also, therefore, we have to decide each case on its merits, and to take into consideration on the one hand the question of infectiousness and on the other the question whether any organic changes have arisen which might prevent an eventual pregnancy.

Where we have an acute gonorrhœa to deal with, that is, in association with infections occurring during the married state or with individuals who marry while yet suffering from acute gonorrhœa, the possibility must also not be lost sight of that complications and metastases caused by gonococcal invasions, especially in the joints and in the heart, are factors to be reckoned with. These forms are, however, of rare occurrence as compared with the enormous number of cases of disease of the appendages arising in connection with acute infections in women.

We have seen above that by a careful medical examination it is possible to recognise the principal dangers accruing to the married state from a previous gonorrhœal disease, and that the medical man is therefore in a position to form an opinion as to the admissibility of a contemplated marriage.

But the question arises: Is this sufficient to ensure a healthy married life from all points of view? Have the legitimate interests of both parties to the contract received their due recognition by the fact that one of them has obtained a one-

sided consent to the marriage? We must not lose sight of the fact, no matter how highly we value the success achieved by medical science and medical skill, or the conscientiousness and care with which the medical examiner has carried out his duties, that the possibility of a mistake being committed by the doctor, is after all, not altogether to be avoided. Under such circumstances, then, it ought to be demanded that in marriage, like in any other contract, both sides should be in possession of all the information on the risks they are incurring, so that they could come to a decision accordingly.

The demand that not only the prospective husband should obtain from his doctor the consent to his marriage, but that the would-be wife, or her parents, should be informed on all points is the more justified as the injurious consequences of an eventual infection occurring, notwithstanding the favourable view of the medical examiner, have to be borne not by the husband but mainly by the wife.

And of what use is afterwards to the wife who has been infected by her husband the consolation that the latter has before the consummation of the marriage subjected himself to a most scrupulous medical examination? Morally, no doubt, he is to a certain extent acquitted, but the whole injury nevertheless falls upon the innocently suffering wife.

Necessity to enlighten the wife.—The ideal state of affairs would therefore be for both parties to a projected marriage to discuss before its accomplishment not only the social and economic arrangements, but also the question of their reciprocal health. As a matter of fact I know quite a number of cases where this point was made the subject of the frankest discussion and where it was settled to the full satisfaction of all the parties concerned. It cannot be denied that the conduct of the man who takes this course fearlessly and honestly deserves every praise and recognition.

We know, however, to our regret that such voluntary action is taken by very few men. The prejudice existing universally against sexual diseases is responsible for the disastrous inclination to keep secret everything connected with them, and is, with respect to the subject of marriage particularly, sufficient

to explain the silence maintained on the point. Who likes to speak on the eve of his marriage of former sexual intercourse or haply of sexual disease?

Eventual compulsory measures.—But if the enlightenment of the girl's parents on the part of the suitor—for the sake of simplicity I will take this as the most frequent situation—does not take place voluntarily, can it not in any way be obtained by compulsion directly or indirectly, so as to secure for the would-be young wife a certain amount of protection from the injurious consequences of a possible previous gonorrhœa of the husband?

The suggestion has been thrown out that each of the contracting parties to a projected marriage should produce before the civil authorities a certificate of good health. Others, again, see in the introduction of some sort of compulsory life-insurance previous to the consummation of the marriage a means to prevent matrimonial union with individuals who are obviously diseased or strongly suspected of being so.

Certificate of good health.—That such arrangements would in very many cases accomplish a great deal of good cannot be doubted, and it cannot even be said that there is any serious objection to a legal enactment providing for the obligatory certification of the health of would-be married couples, so long as it would be left to the discretion of the contracting parties to make what use they like of the information supplied by the compulsory medical certificates. I cannot, however, see the feasibility of giving to the State the power to prohibit any marriages for reasons of health or disease,—unless it be one of those gross cases of affliction or infirmity where marriage would appear almost as a severe offence.

I need only recall how often—and with regard to the so-called "chronic gonorrhœas" particularly we have discussed the point at some length—medical opinion varies as to whether a man is still infectious or not: even scientific medicine is not unanimous in its views on certain points. Or shall we establish some sort of superior medical court to decide who is to marry and who is to remain single?

If the proposed arrangement would, however, confine itself

to demanding a certificate of health from each party to the projected marriage to be submitted to the inspection of the other, we should achieve what I laid down as being necessary, namely that the two individuals about to marry one another should be made acquainted with each other's previous history before taking the irretrievable step of joining their fortunes for good or evil. It would, of course, follow that the contracting parties would have, like in life-insurance proposals, to mention the names of the medical men—if any—under whose treatment they have formerly been, and that the latter would be under an obligation to communicate their observations and views on the former diseases of their clients—of course, on the understanding that they are at liberty to disclose what was entrusted to them under the seal of professional secrecy.

Penalties.—We must further consider how infections during the married state could be made amenable to civil and criminal law.

Criminally, sexual infections notoriously fall under the heading of bodily injuries, and many cases would undoubtedly be followed by punishment if there were any prosecutors. The demand has been made that the physician shall communicate to the infected spouse the diagnosis, and explain to him—or her—the manner of the infection for the purpose of enabling the respective married couple to adjust their differences or to take the necessary judicial steps. The entire medical profession would doubtless resent such a duty being thrown upon it in these general terms. In very many cases the doctor has certainly no objection whatever to giving his client—husband or wife—the desired information or to naming the precautions to be adopted (f. i. if the treatment or the protection of the children demands it, etc.) : in many others, however, he would hesitate before doing so; and reflecting what melancholy results might ensue from his communication, he might feel inclined to adopt an expectant attitude; or he might make an attempt to become informed, perhaps by a joint consultation with the other partner, whether the interests of both parties would not be better served by throwing the veil of silence over the whole affair than by making an open and inconsiderate disclosure.

A good doctor is not merely a scientific expert; he must also be a helpful friend and a man of tact; sometimes he can confer by silence far more good upon both husband and wife than by telling the truth.

But most cases of conjugal infection with gonorrhœa cannot be touched by the criminal law because the husbands infect their wives neither with intent and premeditation, nor through criminal negligence. They are not criminally negligent in those cases either, where they get married in the honest belief that they are healthy and non-infectious, because they are not sufficiently well-informed in medical matters or because they are prompted to act as they do by the mistaken advice of their medical man. Criminal negligence could therefore only be constructed if it were possible to prove that the husband did think of the possibility that he was diseased, or that he ought to have thought so, and that he nevertheless did not obtain a medical consent to his marriage.

But even where this consent has been obtained, can it be relied upon with confidence as affording a sure safeguard? We have said above how difficult it sometimes is from the purely scientific point of view to come to a decision as to whether the consent to the marriage should be given or not. And have all medical men really at their command that measure of knowledge and skill which is required in order to do full justice to these difficulties? Do all doctors possess such a high degree of human self-reliance, that they are able to form an impartial and quite unprejudiced opinion without regard to all the wishes expressed by the advice-seeking client?

So as to make the medical opinion as conformable to the truth as practicable it might therefore be necessary, in order to obtain at least the highest possible protection, to make the medical man on the strength of whose opinion a marriage has taken place responsible for the infection occurring in unfortunate cases. Whether this is possible, depends upon whether it can be proved that he conducted the examination in a negligent manner, and also upon the form in which he communicated his opinion to the client.

But this, again, would certainly have the result that no

medical man would ever give an unqualified assent to a marriage, or else he would surround it with so many clauses that the patient would not be any the wiser. On the other hand this might, perhaps, have the useful result that the patients would, in order to get out of their responsibility, more frequently than formerly reveal to the other side the true state of affairs before the marriage is arranged. There would be, however, one injurious consequence, namely, that the men would cease altogether to seek medical advice since they could not expect the latter to be other than unfavourable or doubtful, and that consequently the elimination of those cases which are really dangerous to the married state would thus no longer take place.

A legal responsibility of the medical practitioner can therefore be imagined only on the supposition that a compulsory declaration of health on the part of the candidates for marriage has previously been decided upon in some way or other.

Since, as we have seen, a criminal prosecution for gonorrhœal infection of the married partner is hardly likely ever to occur the question arises: Is not a threat by civil action possible? Could it not be established by law that information respecting the fact of gonorrhœal disease having existed before the marriage, can under all circumstances be demanded as a right, and could not, on account of the omission to impart this information, a civil-law claim be instituted by the infected partner against the partner causing the infection?

To my mind this demand which has been formulated also by *Flesch* and *Wertheimer* is perfectly justified. It stands to reason that if the law is to be altered in this direction, further alterations would also become necessary in the Civil process, that would tend to establish the facts of the case. (See on the point the work by *Flesch-Wertheimer*.)

§ 300 of the German Criminal Code.—As a further means of protection for the married state the suggestion has been thrown out that compulsory or voluntary notification on the part of the medical profession might be introduced, involving the annulment or modification of § 300 of the German Criminal Code.

Compulsory notification can hardly be thought of seriously. It is sufficient if I mention that particularly with respect to the gonorrhœal infection in the married state with which we are dealing here, diagnostic infallibility on the part of the medical man is entirely out of the question, and that in numerous cases the patients give to the doctor a wrong name or none at all. It is obvious that this practice would be adopted far more if it were known that an obligation rests upon the medical profession to interfere preventingly in connection with all sexual diseases by notifying the cases coming under their observation.

More plausible is, however, the suggestion that the natural wish of parents to protect their daughter who is about to be married, from an eventual conjugal infection, should receive official recognition and satisfaction by the suspension, with reference to cases of marriage, of § 300 of the German Criminal Code, which imposes upon medical men the obligation to maintain silence on matters of which they become cognisant in their professional capacity.

There is no doubt that at the present time a doctor would be liable to punishment if he were, contrary to § 300, to give information in his possession to a person about to be married regarding the illness of the individual whom he or she is marrying and whom he—the doctor—has attended professionally. This is not the place to enter into a detailed discussion of all the reasons which have been adduced in favour of or against an alteration of this § 300. But I should like to express the opinion that with the exception of such legal cases in which the issue often depends on the medical expert's evidence exclusively, the importance of the paragraph is in practice not so great as to make it worth while to have a serious controversy on the subject of its abolition or retention. Either the doctor has no opportunity at all to offer any advice on the point because he knows nothing of the marriage-projects of the patients who were formerly or quite recently under his treatment; often enough he does not even know their real names; he would not therefore be in a position to use his warning voice. Or else, he can in spite of the existing law sound a note of warning,

when approached for information, while adhering strictly to the standpoint that he is bound to refuse the request. In fact I always try to avoid to learn the name of the person with respect to whom information is desired, so that my refusal to divulge what I know cannot be interpreted as a sign that my answer would in any way be unfavourable to my client. But I am quite at liberty to say to the party questioning me: "Induce the person respecting whose health you wish to make inquiries to come here with you. If he will authorise me in your presence to give you what information is in my possession, I will tell you all about him."¹

In this way the situation is made clear to anybody with some common sense. If the person suspected of having a disease does not allow the doctor to speak openly and frankly, the party desirous of knowing the real state of affairs (perhaps, the future father-in-law) can draw his own conclusions as to the reason why the information is refused.

The necessity of general enlightenment.—

The question resolves itself therefore into shedding as much light as possible on the danger which sexual diseases involve for the married state, into causing as many parents as possible to inform themselves as to the health of the men to whom they are on the brink of entrusting their daughters. This plan seems to me at least just as efficacious in preventing the misfortunes caused to married couples by gonorrhœa and other venereal affections as the general abolition or modification of the § 300. The latter course, in fact, I should very much deprecate since the paragraph in question undoubtedly facilitates to many men the way to the consulting rooms of the medical profession.²

¹The French law forbids the imparting of such intelligence even though the client authorises his doctor to do it.

²All the questions touched here briefly have been discussed by the *Société française de prophylactique sanitaire et morale* at several very interesting meetings. (See Bulletin of this Society 1903. Fascic. 6, 39.) It was unanimously decided that those about to marry, or their respective parents, should be supplied by the official preparing the necessary documents relating to the civil marriage with a printed form calling attention to the dangers of sexual

Facilitation of divorce.—Finally, protection against the more or less reckless introduction of disease into the mar-

diseases.—The following outline of such a circular has been presented by *Jullien* in the name of a commission:

"INSTRUCTION TO FUTURE HUSBANDS AND WIVES:

You are about to marry one another and to create a family.

You have on the strength of your mutual attachment and of your material conditions decided to lead a joint happy married life.

But it is just as important to think of your health from which will depend also the health of your partner and that of your children.

Perhaps, you have had the misfortune to contract one of those infectious diseases which are popularly called 'diseases of youth,' 'venereal diseases' or—very wrongly—'shameful and secret complaints.'

Two of these, gonorrhœa or the 'clap,' and syphilis or the 'pox,' may bring to a family the direst consequences.

If you get married while still suffering from an infective stage of one of these diseases (gonorrhœa—a still existing discharge; syphilis—the presence of a rash on the body or of pimples on the mucous membranes), if you therefore convey with your full knowledge and with absolute certainty your disease to the individual who places trust in you, it constitutes a crime. Whoever becomes guilty of such an infamous action, brings upon himself a shameful and disgraceful future, and may probably have to look forward to a legal dissolution of the marriage and the division of the common property.

Gonorrhœa is conveyed through a discharge from the urinary passage—possibly only through an apparently insignificant drop in the morning,—and is apt to cause, particularly in women, a series of complications (inflammation of the womb, peritonitis, etc.). It frequently gives rise to a long illness necessitating staying in bed and sometimes severe operations, and leads with almost absolute certainty to barrenness and in very many instances to blindness in new-born infants.

Syphilis, which commences with a small sore spot and which leads subsequently to eruptions on the body and on the mucous membranes, can attack in its further course all the organs, and will cause, if the brain also become affected, very often softening thereof and insanity. Children of syphilitic parents are liable to die while yet in their mother's womb, or they come into the world misshapen and deformed. They can infect their wet-nurses, and those around them, so that it may come to actions for damages and to a public scandal.

Remember, that even with an energetic treatment, and even after many years, the cure of the disease may be insufficient and incomplete.

It is therefore the duty of every honourable man to let himself be examined by a qualified medical man.—But be on your guard against quacks!—You will then know whether you are completely cured, and whether you may get married without risk or whether you must yet postpone your marriage for a while. In this wise you will avert a great calamity!"

ried life is sought to be obtained, and not without justification, by the recognition of venereal disease in particular as an especial ground for divorce. At the present time, however, and especially since the new Civil Code has come into force, sexual affections and particularly gonorrhœa can only with very great difficulty be depended upon as evidence by which a dissolution of the marriage can be obtained. And yet it may safely be assumed that many men who have become, as husbands, dangerous through former sexual disease would not have married, or that they would, at least, take greater care in having their gonorrhœa properly treated and thoroughly cured, had they reason to fear that a painful situation, more or less detrimental to their social position, were likely to arise later on through their being declared guilty in eventual divorce proceedings.

In this question, too, I agree entirely with *Flesch* and *Wertheimer* on every point. Uncouth as it may seem, the statement that the sexually infected wife is in most cases deprived of her rights and that she cannot as a rule even claim damages, is nevertheless in consonance with the facts.

Flesch and *Wertheimer* lay down the following proposition: Since medicine is unable to exclude the theoretical possibility of gonorrhœa and syphilis being acquired by the wife apart from sexual intercourse, the legal position of the mar-

Ledermann thinks that a great deal could be achieved by the authorities warning those diseased or uncured individuals, who contemplate marriage, by means of a printed circular handed to them when making the necessary declaration, and containing some such words as the following:

"All persons who intend marriage are recommended, in their own interest as well as in that of their future husbands or wives and also in that of any issue they might subsequently have, to obtain beforehand a medical certificate as to the state of their health. Where infectious diseases are present the marriage should be postponed until a complete cure has taken place, so as to prevent a communication of the disease."

Translator's note: Though this part of the present article is written entirely from the German point of view and much of it can hardly be considered applicable to British or American conditions I have thought it advisable to reproduce it without any omissions as it gives a correct picture of the trend of continental opinion on the matter. That few will be disposed to deny the wisdom of the suggestions, goes without saying, but whether they are capable of being carried out in practice, that—as *Kipling* would say—is another story!

ried woman who has been infected by the husband is such as to practically debar her from obtaining redress at law, for under the existing method of procedure it is not always possible to furnish direct proof that the infection originated from the husband.

Alteration in the method of procedure.—"It must therefore be demanded that gonorrhœa and syphilis if they occur either directly or indirectly in a person living in the married state, shall be considered *eo ipso* as a ground for divorce without it being necessary to prove adultery."

"The second demand is the admissibility of the compulsory administration of the oath in all those applications for divorce which rest upon the presence of syphilis and gonorrhœa, as evidence of the facts which relate to the origin and nature of the disease."

"Finally it is to be demanded that the medical advisers of sexually diseased married individuals shall, in questions relating to marriage and divorce which depend upon the presence of syphilis and gonorrhœa, be called as experts or expert witnesses, with the proviso that they are exempted from the obligation to maintain professional secrecy."

"Where a marriage is dissolved, the husband or wife who has been infected by the other partner shall have a claim for maintenance, such claim for support and damages to arise quite independently of the circumstance whether the infecting partner was or could have been aware of his illness. The fact that infection did take place must be sufficient."

"Or it should be laid down at least, that the infecting partner being the cause of the injury, shall have the onus thrown upon him of proving that the injury, i. e. the infection, occurred in spite of the requisite care taken by him, while at the present time it is the infected party who must prove that the infecting one caused the infection intentionally or negligently."

Supposing the proposals just discussed, or a part of them, were adopted in practice, what would be the result? At first, no doubt, fewer men,—for it is principally the male sex for whom the regulations are intended—would marry. After a

time however, and gradually, that would be achieved which we all desire so ardently, not only for the protection of the married state from the dangers of gonorrhœa and other sexual diseases, but for the protection of the nations in all their ranks and classes:

1. A restriction in the pre- and extra-nuptial sexual intercourse—which is at present decidedly practised to a greater extent than physiological necessity dictates—so as to avoid the dangers of such intercourse.

2. A more extensive familiarity with, and application of, the measures calculated to prevent gonorrhœal infection, among those who cannot or will not refrain from sexual intercourse.

3. A far more careful treatment of acute gonorrhœa, from which, of course, mainly depends the future improvement in respect of all injuries arising from gonorrhœal disease. Only a very small fraction of the intra- and extra-nuptial infections which after all are generally unintentional, and not even always recklessly occasioned occurrences, only a fraction of the still numerous complications, metastases and sequelæ, would continue to happen if gonorrhœa were properly treated and a cure attempted during the acute stage—an object by no means difficult to attain in the majority of cases. Two factors must, however, co-operate for this purpose, namely doctor and patient.

If it was formerly possible to accuse medical science that it was not equal to this task, this is no longer the case. Medicine has at its disposal on the basis of the recognition of the gonococcus ample diagnostic and therapeutic auxiliaries, and what scientific medicine teaches, becomes daily more and more the common property of the medical profession.

But the lay public is still disinclined to acknowledge the importance of gonorrhœa and the necessity of treating it carefully and seriously from the very first day. Our object must therefore continue to be the oft-repeated inculcation of the truth, and a specially effective means of warning will be found in the dangerousness of gonorrhœa and of its results to the married state!

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XV

Syphilis in Relation to Marriage

XV

SYPHILIS IN RELATION TO MARRIAGE

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More often than in any other disease the physician is asked for his opinion in connection with the so-called sexual diseases as to whether an individual who was formerly infected, may marry and if so, how long after the infection, and also as to whether and how far the future family of the candidate for marriage is thereby endangered. In contrast with gonorrhœa which offers by our knowledge of its causative agent discovered by *Neisser* a valuable guide in the determination of the contagious character of the disease, we are when in the presence of syphilis of whose exciting cause we are still ignorant, entirely dependent on purely empirical observations in all the questions pertaining to the risk of infection. This is especially the case when considering the point, if a cure may be regarded as definitive, as knowledge derived from empiricism is never absolutely reliable. Happily, however, syphilis is a disease which unlike any other almost has for centuries been studied in all its minutest details, which has been investigated by generations of the most experienced observers in all the branches of medicine with regard to its effects and consequences, so that we are in a position to draw from the enormous material at our disposal certain conclusions if not with absolute certainty at any rate with a high degree of probability.

For the contraction of marriage syphilis acquires a special importance in contradistinction to gonorrhœa in which the infection takes place only through the external transference of the poisonous substance onto the mucous membranes predisposed to it, by the fact that in addition to being transmissible by external infection, it is also communicated through the medium of the germ-cells, exposing thereby the offspring to a great danger.

It seems therefore advisable to arrange the discussion of the questions relating to this chapter in two groups, viz.:

1. What is the importance of syphilis with regard to the contraction of marriage?
2. What are the consequences of syphilis in the married state?

Is syphilis curable?—As regards the discussion of the first point, we have first of all to remove a prejudice existing less among the medical profession than among the lay public, namely that syphilis is incurable. The correction of this view is the more important in view of the following observations, as otherwise a great part of them would be quite superfluous; for were syphilis, indeed, an incurable disease which endangers by its communicability the other and healthy partner as well as the offspring, it would, of course, be necessary for the medical profession to refuse in every case consent to the marriage of a syphilitic, and in this way the first part of our subject would be done with. Fortunately this pessimistic attitude is not justified; for many thousands of observations by medical men (including such experienced observers as *v. Sigmund, Kaposi, Fournier, Neisser, Lesser* and others) and by laymen whose judgment is worthy of attention and who, having formerly suffered from the disease, married after perfect cure, and lived to an old age in full health and undisturbed family happiness, support the view that syphilis can be cured so as to leave no injurious consequences behind either in the ex-patients themselves or in their families. We have a further proof of the curability of syphilis in the frequently observed re-infection with the disease of patients who have formerly suffered from it, since we know from experience that as long as syphilis lasts a fresh infection does not usually take place.

But having thus demonstrated that syphilis is curable, we have at the same time answered in an affirmative manner the frequently ventilated question whether a syphilitic may marry at all.

When has a cure been effected?—We must ask ourselves, however, when is a syphilitic to be regarded as

cured and under what circumstances may he be permitted to marry?

The answering of these questions requires great circumspection and it can only be done by most carefully weighing the whole course of the illness, the treatment adopted and all the other circumstances relating to the general constitution of the individual formerly affected.

It is, of course, clear that no syphilitic may marry so long as infectious symptoms of the disease are present, since he might disseminate the same by direct contact as well as by the common use of domestic utensils, but above all by the process of generation or conception respectively. Unfortunately this apparently simple and evident principle is often disregarded, as shown by the numerous cases of syphilitic infections observed daily in marriages but recently contracted. The momentary absence of diseased conditions is, however, not always a proof of cure, since syphilis often presents latent periods which may last for years and during which there are no outward signs of the poison still slumbering in the body with its virulence unimpaired.

Duration of syphilis.—To estimate an established cure other conclusive factors serve as a guide, above all the duration of the syphilis. The further removed the period of the infection, the smaller the danger of the infection being passed to others, and let it be pointed out at once, that the danger of transmission to the offspring often lasts much longer than the period of direct communicability. It is generally supposed that the transmissibility of the disease by contact disappears in about 3 or 4 years after the infection. This statement, however, which is found in all the well-known text-books, is with regard to the consent to marriage too vague, and though it may apply to the majority of cases it is too much modified by exceptions to claim general acceptance. For although cases are known in which marriages, recklessly entered into by syphilitics in the first years of the illness, have turned out happy and have not resulted in a transmission of the disease, there are on the other hand instances in which infectious symptoms often appeared and transmissions occurred five, six and even

ten years afterwards. A definite statement as to the time during which the danger of infection exists is therefore not sufficient for our purposes; it requires supplementing by other factors as well which enable us to fix somewhat more sharply the time-limit of the cure.

Course of the disease.—Among these factors we must take into consideration in the first place the course the disease has taken during the first years of its existence and the treatment adopted and carried out. It is true that far-reaching conclusions with regard to a radical cure cannot be drawn simply from a so-called benign course, by which is generally understood the mildness and infrequency of the symptoms and their rapid disappearance in consequence of the treatment instituted. For often enough there occur in such individuals later on severe tertiary symptoms, perhaps, just because the patients, misled by the insignificance of their symptoms, do not attach the necessary importance to their illness and are more remiss in having themselves treated properly than others whom oft-recurring symptoms bring to the doctor more frequently. On the other hand it must also be remembered that if in strong and sensibly-living people who are during the first 3 or 4 years under good medical supervision and successful treatment, the syphilitic disease takes the above-described satisfactory course and the general constitution does not in any way suffer, we are to a certain extent in a position to offer a favourable prognosis for the future.

Less favourably we must judge those cases in which secondary symptoms keep accumulating for years, among which those with frequently recurring symptoms of the mucous membranes seem to offer more unfavourable prospects with regard to the termination of the disease than the cutaneous eruptions which generally recur more seldom and which generally also respond better to the treatment adopted. Perhaps, the frequent recurrence of the mucous patches, especially of the mouth and pharynx, is in men principally due to the numerous local irritants such as nicotin and alcohol, by which fresh proliferations of the poisonous substance are produced again and again. At any rate syphilitics who aver that they have for years suf-

ferred from numerous and obstinate relapses of the disease, must be judged with far greater care in respect to the question of a definite cure. Against that we see in patients with numerous relapses during the first months after the infection, that the syphilis frequently runs its course in later years without any deviations, so that there is no necessity to depart from the general rules which influence the decision as to whether a marriage is permissible or not.

That the so-called syphilis præcox, that is the form of the disease observed not very frequently in patients who have been well treated, in which more or less numerous signs of tertiary syphilis appear very early, often in combination with secondary symptoms, or in which more secondary symptoms follow after tertiary ones,—that this form offers to begin with a worse prognosis for the further course of the disease, as is asserted by some authors, is not by any means true. On the contrary, such persons, if they have been suitably treated, have often been known to get well in a reasonable time and to live a happy married life without injury to themselves or their families.

The case is, however, different with those who have suffered from the very beginning of the disease from "malignant syphilis." By this we understand cases in which—frequently, but not always, in association with phagedænic primary lesions—papulous-pustulous eruptions of the skin and the mucous membranes appear at an early stage, cases which, often resisting the mercury treatment, result as a rule in severe ulcerous injuries and are accompanied by marked general cachexia. Although it is possible to succeed finally in curing these patients completely within the ordinary period of time, there remains, nevertheless, in many cases a weak state of the organism which must be taken into account when the subject of marriage is under consideration. In this connection we must also bear in mind that very often debilitating conditions are present in the body as the cause of malignant syphilis and these alone may play an important part in deciding the marriageableness of the individual in question.

The question is finally to be considered how patients, who

have at any time suffered from tertiary symptoms, are to be judged in reference to a permanent cure and the consent to an eventual marriage. The opinion that tertiary products as such are not infectious, and that as a matter of fact the occurrence of these symptoms after a prolonged latency is, indeed, evidence of the disappearance of the infectiousness, can no longer be sustained as a generality. With certainty we can only say that tertiary products may yet appear at a time when syphilitics have so to speak demonstrated experimentally—by the procreation of healthy children—that they are not infectious. But we also know, and attention has already been called to this, that tertiary symptoms often appear very early, that is to say, at a time when every lesion is capable of causing an infection, and there is no apparent reason why at this stage a transmission should not take place through the secretion of a gummatous ulcer just as easily as through a rhagade in the skin. It is not therefore from the occurrence of the tertiary product as such that the extinction of the infective stage can be judged, but exclusively from the period of its occurrence after the infection. The later a gumma appears after the infection and also the longer the time which has elapsed since the disappearance of the last symptoms of the condylomatous period, the less will the danger of transmission be present; and we can probably therefore lay down the general principle that persons who have after a prolonged latency of secondary symptoms been seized by symptoms of a tertiary character are no longer a source of danger to others. There are, however, exceptions to this, though they have no practical importance from the point of view which concerns us here, as proved by a case communicated by *Sack* in which a transmission of syphilis took place from husband to wife through a gumma ten years after the infection.

It is clear that it is necessary in persons who have suffered from late symptoms, when considering the question of consent to a marriage to pay attention in addition to their infectiousness, also to the seat and frequency of the tertiary symptoms, and where vital organs were affected, especially after visceral or cerebro-spinal syphilis, to give that consent after a most

careful deliberation only. Repeated relapses in these organs must, however, even if the patient has withstood them safely and without any ill-results, be regarded as a contra-indication against a contemplated marriage or they must dictate at the very least a further observation-period extending over many years. The consequential results of late symptoms must naturally also be taken into account, and if the same have left behind permanent defects and functional disturbances, consent to the marriage can only be given with the greatest reserve.

Treatment of syphilis.—An important indication determining the time of a complete cure is further supplied by the specific mercurial treatment which has been carried out. No matter how the views of the various authors differ as to the manner and accomplishment of this treatment, there is no doubt whatever on one point, namely that the more thoroughly and energetically a patient has been treated during the first 3 or 4 years of his illness, the more favourable the prospect of a rapid cure and of the freedom from late tertiary manifestations. It will therefore be much easier later on to grant the consent to marriage to an ex-syphilitic whose illness has taken a normal course if the history of the case shows a thorough treatment, than to a person with a similar outward course of the disease but whose treatment was insufficient. In the latter case one should prefer to recommend a longer period of observation and to utilise the same for purposes of treatment.

Period of immunity.—Besides considering the course of the disease and the kind and efficiency of the treatment adopted, there is another point which is of great importance to the consent to the marriage, namely, for how long since the last appearance of the symptoms the patient has been free from syphilitic manifestations. This interval which *Fournier* calls the period of immunity is in so far of importance, as the further back the last signs of the disease have been observed the greater the probability that the activity of the disease is at an end, and that the illness has passed the acute infectious stage which is characterised by the occurrence of more or less frequent secondary symptoms. As has already been mentioned, the absence of symptoms in a syphilitic is not in itself

a reason for supposing that the disease is extinct, since the course of syphilis is notoriously often distinguished by prolonged latent periods. But if a syphilitic has successfully withstood the first 3 or 4 years of his illness the circumstances being normal and the treatment good, and if he has also behind him a certain period of time, which is differently estimated by different authors, in which no symptoms have shown themselves, the physician may conscientiously regard the patient as cured, or at least as no longer infectious, and give his consent to the contemplated marriage of the individual applying for the same.

Generally speaking the contraction of a marriage may therefore be allowed if at least 5 years have elapsed since the infection took place, if no more manifestations have occurred during the last 2 years, and if the patient has received an energetic and thorough mercurial treatment.

The principle has, moreover, been generally adopted, which has almost assumed the form of a law, that the consummation of the marriage must be immediately preceded by a last mercurial treatment—the so-called “safety-cure.” Where secondary symptoms appear at a later stage the date of the marriage must be postponed first for two years and then made dependent upon a renewed examination. Tertiary symptoms cannot as a rule be regarded as an absolute marriage-obstacle if they have occurred later than 5 years after the infection and at least two years after the last manifestation of secondary symptoms, and if they have not attacked any vital organs. Even then their cure must be awaited if it is only for æsthetic reasons; an observation-period of one year is also necessary, as there may occasionally arise obstacles to a marriage from the scars and injuries left behind after the cure.

It is impossible for the physician to give an absolute guarantee that eventual injurious consequences will not make their appearance after the contraction of the marriage, seeing what a variable clinical picture syphilis constitutes. He is, however, perfectly justified, as *Neisser* truly says in his popular thesis: “Is Syphilis Curable?” in expressing an opinion on the basis

¹Published by Vogel and Kreienbrinck. 1903.

of what medical science has ascertained by the work of centuries, as to whether the probability that a cure has been achieved is so great that the advice-seeking patient may consider himself healthy and that common honesty permits him to get married. If in spite of all the care exercised, unfavourable consequences appear nevertheless during the married state, the same must be included among the list of unfortunate accidents to which all mankind is liable.

These considerations which the physician has to ponder over in the case of every ex-syphilitic candidate for marriage, when asked for his opinion on the possibility of that step being taken, are naturally very much facilitated if he is acquainted with the history of the patient from the time of the infection or if he has medically treated him. Very often, however, such candidate for marriage is entirely unknown to the medical man who is approached for an opinion. The doctor sees him for the first time, he must rely for the details as to the former symptoms of the syphilis and the treatment carried out, entirely upon the anamnestic data furnished to him by the patient seeking his advice who, desirous as he is to throw off his own shoulders all responsibility for any future mischief, is naturally tempted to answer the questions addressed to him in such a manner as to favour as much as possible the plan he is pursuing, and thus to deceive the examining physician. If the maxim "*omnis syphiliticus mendax*" is true with respect to such patients who still manifest active symptoms, how much more applicable is it likely to be to those whose entire future, perhaps, depends on the doctor's consent to a projected matrimonial alliance? In such cases the doctor should by an objective examination endeavour to find out whether his client is perfectly free from all symptoms or whether there are any residual signs which, though unimportant in themselves, yet permit of a conclusion to be drawn so far as the course of the disease is concerned.

Examination of the body.—This examination must embrace the entire body, and it should always take place in the best possible light, preferably daylight. The person to be examined must therefore be completely undressed. Every

present condition deviating from the normal must be carefully weighed from the point of view of a possible connection with syphilis.

Scars situated on the penis—apart from fresh indurated scars—do not in themselves permit of any conclusions with regard to former primary affections, as genuine hard chancres heal as a rule without leaving any marked scars or at the outside more than atrophic pigment-patches. If some ulcerations have left scars behind, they were either soft or mixed chancres or chancres of a phagedænic or gangrenous character. From the form of single scars, therefore, it is not possible to judge with certainty as to the original character of the ulcers. More important, perhaps, are the groups of cicatrices, arranged in an annular, serpiginous or kidney-shaped manner, which are characteristic of exhausted tubero-ulcerous or gummatous processes. If we find at the same time similarly arranged groups of scars in other parts of the body, they give us in conjunction with the anamnestic data a certain indication of the duration of the syphilis. Favourite situations of these cicatrices are especially the legs which are also frequently the seat of extensive gummatous scars; in like manner the borders of the frontal and nuchal hair, the hairy scalp, and more seldom the skin of the trunk. Such scars may, however, be present in any part of the body.

Of importance is the presence of indolent glands (f. i. inguinal, cubital and cervical) in those places which are well-known to have a predilection for syphilis. Their existence calls for increased watchfulness in estimating the duration of syphilis, as they are supposed to be no longer demonstrable in cured patients.

The presence of leucoderma which is observed more often in women than in men, and which is situated as a rule on the neck, but sometimes also on the back and shoulders, justifies the assumption that the syphilis has not yet passed the third year of its existence. It does occur, it is true, beyond the third year, but very seldom, indeed.

The examination of the skin of the gluteal region should be accompanied by palpation, for infiltrations are occasionally

demonstrable in the glutæi which are the after-results of former injections of mercury.

The inspection of the anal region is apt to reveal the presence of condylomatous processes, not to be mistaken for hæmorrhoids. They are an indication that the infective stage of the disease is not yet at an end. This applies also to the streak-shaped alopecias which occur generally in the early stages, whilst a more diffuse loss of hair, though dependent on syphilis, takes place as a rule during later stages of the disease.

Where cutaneous eruptions are present, the diagnosis, whether they are syphilitic or not, encounters sometimes great difficulties.

The inspection of the outer skin must be followed by that of the mucous membranes, especially those of the mouth, the pharynx, including, if possible, the larynx, the rectum and vagina. The presence of mucous patches is a sign of infectiousness necessitating the postponement of the marriage for some years. Leucoplaquia buccalis, or the so-called psoriasis linguæ et buccalis, may be the consequence of former syphilis, but also that of other injuries. In any case it is no longer infectious. Where there is reason to believe that it is of syphilitic origin, the attempt to remove it by a mercurial treatment, is at all events justified. It is sometimes possible to cause its disappearance in this way.

A very suspicious symptom of a former syphilis is the so-called flat atrophy of the tongue. Its presence can be ascertained by the mirror and palpation. Other scars in the cavity of the mouth and pharynx also supply information with respect to a previous syphilitic affection.

One should never omit to examine the testicles, the syphilitic disease of which frequently remains unknown to the patient, while it can hardly escape detection by the palpating finger.

Finally, diseased processes in the nervous system often enable one to arrive at a conclusion as to a former case of syphilis. In how far they are of importance in relation to the question of matrimony is discussed in another chapter of this book.

The examination of the patient thus frequently yields valuable information on the course of the syphilis and indications for estimating the degree of its cure.

The result of the examination must be communicated by the physician to no one but the individual examined, and all information to his friends or relatives is to be categorically refused. It is sufficient to tell the inquirer that medical men are bound to maintain silence on all points concerning their practice and that they are at liberty to make disclosures only if authorised by their patients to do so.

The effects of syphilis upon the married state.

Syphilis and the married state.—Syphilis is introduced into marriage in two ways. Firstly, through one or both of the married partners entering the married state while suffering from manifest syphilis, and secondly through one or the other of the married partners becoming infected with syphilis, either by acquiring it in extra-conjugal sexual intercourse or by innocently falling a victim to it. The latter alternative may also happen sometimes through the children, who, having in some way or other been infected with syphilis, transmit it to the parents. Every individual thus infected is a source of danger to the other healthy members of the family. The circumstance particularly that the disease frequently remains unrecognised for a long time and therefore untreated, and the fact that the necessary precautionary measures are in consequence omitted, render the patient a focus of infection of the worst kind, so that the occurrence of the disease among several members of a family, nay, even regular house-endemics, are by no means rare events.

If one of the two spouses is affected with syphilis, the most important precautions to be taken are: thorough treatment of the patient, and protection of the unaffected partner. The patient must discontinue sexual intercourse during the period of the infective stage of the disease the same as any unmarried syphilitic, and must not resume it without the permission of his medical adviser and without strictly complying with the precautionary

recommendations made to him. But he must also avoid all direct contact through kissing or sleeping with other persons, and all drinking-vessels and other objects, intended for his personal use, must not be used by anybody else. Although the danger of infection is not very great during the period when no symptoms are manifested, it is, nevertheless, possible for the most trifling injury which is even unknown to its bearer, to effect a transmission under favourable circumstances. If at all practicable, the children of parents of whom one or both suffer from syphilis, should be removed from the house.

In addition to the danger of infecting the members of the family who have hitherto been healthy, syphilis as such can influence married life most disastrously. Apart from the material damage entailed by the expense of the treatment, and by the more or less pronounced deterioration of the earning capacity of the patient, the psychical factors alone are sufficient to disturb the happiness of a married couple. To begin with, the consciousness of the syphilitic partner that he suffers from syphilis, especially if he has brought the disease upon himself through his own fault, is an element of the greatest injury to the married life, even though the existence of the disease should remain the secret of the diseased party. This is aggravated if the other partner suspects or has positive knowledge of the true state of affairs. Very often this is the commencement of a permanent estrangement between husband and wife or even of an eventual dissolution of the marriage. Added to all this there are, moreover, the personal dangers to which every syphilitic is at all times liable on account of the incalculable character of the course of the disease. It is true that in the majority of cases the secondary stage takes a favourable course and does not materially affect the general health, if the treatment is properly carried out and the constitution of the patient is satisfactory. Most syphilitics, in fact, are able, by taking the necessary precautions, to follow their avocations. Nevertheless, there are exceptions to this rule. In the first place other constitutional diseases, especially tuberculosis, may influence unfavourably the course of syphilis, just as these disorders may in their turn be aggravated by a complication with

syphilis. But the course of syphilis itself is subject to many fluctuations, and particularly women suffer sometimes severely from nervous phenomena, which, presenting especially in the second stage of incubation the character of a serious infection, can become so acute as to keep the patient bedfast for a time. Worse still are those cases of malignant syphilis or "galloping syphilis" already mentioned, from which the patient very often emerges with his health permanently shattered.

What makes however syphilis as such a disease of so disastrous a nature is the possibility that every patient may at any moment be attacked by tertiary phenomena. So long as the latter restrict themselves in some form or other to the outer skin the danger to the general health is small. Mercury and iodine can cure them often in a comparatively short time. It is, however, different when internal organs, and especially the central nervous system, become the seat of the disease. If rapid and specific treatment is not at once instituted irreparable injuries may arise. As an example of many such cases let there be quoted one from the writer's personal experience in which a married man living happily with his wife and occupying a good social position was so unfortunate as to acquire syphilis extra-genitally and quite innocently. In the third year after the infection he suffered from an apoplectic seizure and as he had not told to his family doctor anything about his former illness no specific treatment was adopted. A permanent paralysis was the result and the consequence was that the family who had no other resources but a small pension, was thrown from comparative affluence into the most abject poverty. But we have already mentioned that energetic treatment during the infectious stage offers the safest protection against subsequent tertiary phenomena. If we bear in mind, however, how difficult it is to properly treat married persons when syphilitically infected after their marriage, we can well understand why tertiary symptoms are so very frequent among them particularly. It is just because married life possesses peculiar features of its own. Very many married persons no matter how they have acquired a syphilitic disease experience a natural reluctance to tell their spouses about it. They try to carry

out the treatment as secretly as possible which results in their being imperfectly treated and in their being more liable to succumb to the consequences mentioned. The danger of infection for the other members of the family is, of course, extraordinarily great in these secret cases. The syphilis of married women is particularly often neglected because it is frequently mistaken at the beginning or kept secret altogether, and treatment is instituted only when the disease has assumed a serious character. This is why so many statistics show a higher percentage of women than of men affected with tertiary syphilis.

Another reason why syphilis more often takes an unfavourable course in married persons than in young unmarried individuals is the more advanced age at which the illness is generally acquired by them. Experience teaches that in older people syphilis is as a rule graver and that it occasions at times particularly severe symptoms in the brain and spinal cord.

Apart from the specific combination of symptoms of early and late syphilis, every syphilitic is in the later stages endangered also by a series of diseases the connection between which and syphilis, though generally admitted, is not as yet satisfactorily explained on the basis of cause and effect. It is such diseases as tabes or general paralysis of the insane which occur in this way and which some authors regard as exhausted gummatous or interstitial processes, while others do not look upon them any more as real specific phenomena, but separate them as para-syphilitic or meta-syphilitic groups of diseases. At any rate these diseases which it is endeavoured on the analogy of the affections depending on the toxic effects of alcohol and nicotin to explain by a change in the tissues produced by the as yet unknown syphilitic toxins, are distinguished from the real specific phenomena by the circumstance that they are no longer influenced by mercury and iodine. At the same time some of these diseases are so serious and so disastrous to their bearers that they often result in permanent invalidism and therefore in the complete economic ruin of the entire family. Although the circle of post-syphilitic diseases is drawn by some authors so wide that many affections are brought into a direct

or indirect relation of dependency to syphilis without any justification, it is on the other hand far from improbable that in the future a number of these diseased processes will with a more perfect knowledge of their commencing stages be recognised as genuine specific maladies and again included among the phenomena of syphilis in a narrower sense. Fortunately a large number of properly treated syphilitics escape these dangers which threaten them at all times, so that they can after a bitter experience of bodily and often also of moral sufferings enjoy again later on an undisturbed family happiness.

Nevertheless statistical statements of life-insurance companies show with regard to syphilis a higher mortality-figure among the insured, a fact which is of the utmost importance to the married state particularly. Thus *Runeberg* (Ueber den Einfluss der Syphilis auf die Sterblichkeit unter den Versicherten. *Deutsche Med. Wochens.* 1900, No. 18-20) found about 15% of all the deaths of one insurance company caused by syphilis and he was able to ascertain the average age of former syphilitics as 43.4 years only. The average duration between infection and death was found to amount to 20.2 years. These figures can claim, however, only a limited conclusiveness, as they are based upon far too small a material, and most life-insurance offices, at any rate the German, do not attach such great importance to the dangers of syphilis as to decline the proposals of former syphilitics right away. They only make their admission dependent upon certain conditions which correspond on the whole to those laid down for the marriage of the syphilitics.

Transmission of syphilis to the offspring.—

One of the greatest dangers of syphilis in the married state is the transmissibility of the disease to the offspring. The same can take place in various ways:

1. Through direct infection of the children by one of the two parents who has acquired the disease in the course of the married life;
2. Through the transmission of the syphilis by the act of generation or through placental transmission during pregnancy if the mother is infected;

3. Through the infection of the child during the labour process itself, if the mother became infected in the last months of the pregnancy.

Infection of children born healthy.—As regards the infection of healthy-born children from parents who become infected with syphilis during the married state, the course of this form of the illness does not differ from that in adults. But as the mode of infection is almost always extra-genital, and the separation of the children from other children and adults for any length of time is exceedingly difficult, such children form a constant danger of infection to other persons, especially brothers and sisters, so that infections of entire families are by no means rare occurrences. Moreover, some parents naturally like to keep their illness and that of their children secret from servants and others, and in this way the necessary precautions and the requisite treatment are possibly neglected altogether. The consequence is that very often tertiary symptoms appear decades later, symptoms which are falsely attributed to inherited syphilis, while in reality they are due to infection during childhood. If other constitutional diatheses such as rickets and scrofula combine with the syphilis acquired during childhood, a mutual unfavourable action between them sets in, a factor of undoubtedly considerable importance in regard to the question of infantile mortality.

Hereditary transmission of syphilis.—Far greater attention is claimed by the so-called inherited syphilis (*syphilis hereditaria*). It is distinguished from the disease acquired through direct infection above all by the absence of a primary lesion; in all other respects however it may present the same phenomena as the disease acquired during extra-uterine life. There is not, of course, in hereditary syphilis a question of that hereditary transmission in the strictest sense the characteristics of which have been discussed in detail in another portion of this work, but of a genuine infection. The morbid products of hereditarily-syphilitic children are infectious in the highest degree and can be transmitted to other people, whereas real inherited qualities, such as mental abilities, resemblances and pathological conditions, are imparted to

the inheriting individuals only and can be further transmitted by the latter to their own offspring exclusively.

Undoubted as the fact is that the syphilis of the parents can pass to the children, we, nevertheless, know very little of the special processes under which this transmission is accomplished, and although we are accustomed to speak of the laws of heredity of syphilis we must not lose sight of the fact that these laws are subject to manifold exceptions. This designation appears to take a great deal for granted which by later investigations will, perhaps, be rectified.

According to present views syphilis can be transmitted to the offspring either by the father, or by the mother, or by both parents together.

Paternal or spermatic infection.---The transmission of the disease by the father, the occurrence of which, by the way, has in recent times been doubted by *Matzenauer*, probably without any reason, is to be explained as follows: The sperma impregnated with the infective virus penetrates at the procreative act into the healthy maternal ovum and produces in the fœtus the symptoms of syphilis. Proofs that so-called paternal or spermatic infection does occur as a matter of fact can only be furnished by the demonstration of cases in which the mother is healthy at the time of the procreative act and during the period of gestation, and in which the child either comes into the world with the symptoms of syphilis well pronounced, or acquires the same shortly after birth, without an extra-uterine infection of the child having taken place. Evidence of the health of the mother, that is of her freedom from syphilis, can only be found in the fact that she becomes infected with syphilis shortly after the birth of the child. An infection of the mother long after the birth of the syphilitic child would be of no use as evidence, since re-infections, though they are rare, do occur, and the possibility is not excluded that the mother was still syphilitic during the pregnancy but that she has in the meantime got well again. Such cases proving the actual occurrence of paternal infection are known, though their number is, for the reasons to be specified directly, very small; they claim a special interest as they represent exceptions to a

very important process which has almost the character of an established principle and which is known under the name of *Colles' law* (*Law of Colles and Béaumonts*). According to this law the mothers of children who have inherited syphilis from their fathers are immune against syphilis even though they do not manifest any signs of syphilis. Such a mother can suckle her syphilitic child without fear of becoming infected while the same child is capable of infecting other non-syphilitic persons, for instance, its wet-nurse. As to how this immunity which applies to the great majority of cases is brought about, the opinions of authors vary very much. Some believe that the syphilitic fœtus developing in the uterus of the healthy mother transfers to her through the intermediary of the placental circulation certain immunisation-bodies by which it immunises but does not infect the mother. Others believe in the transmission of the more or less mitigated syphilitic poison in the same manner; many of these mothers are therefore syphilitically infected, though they show at any rate milder symptoms which pass on this account unrecognised more frequently than when the infection is direct. As a matter of fact the infection by their syphilitic fœtuses of mothers who were healthy at the time of the conception, apparently does occur, a process which is called by the French "*choc en retour*." For there have been observations made where married women who had intercourse with their syphilitic husbands for a long time, did not exhibit any symptoms of syphilis until they became pregnant.

At all events we consider the occurrence of purely paternal (spermatic) infections as certain.

Maternal ovular infection.—More difficult is the adduction of the proof that a syphilitic woman impregnated by a healthy man can transmit syphilis to her child through the medium of the "*ovulum*." From the analogy of the spermatic infection we ought to assume that there is also an ovular infection since both generative cells are in this respect of equal value. Ovular infection would moreover be easy to demonstrate if there were not also a second kind of transmission of the syphilitic poison from mother to child, the occurrence of

which is by numerous instances placed beyond doubt—namely the so-called placental infection. In cases of maternal transmission in which the mother was already syphilitic at the time of the conception, it is therefore not possible to answer the question with certainty whether the embryo became infected ovularly or at a later period by means of the placental circulation. That both possibilities of infection can occasionally occur in the same embryo, as has been assumed, is improbable for the reason that, judging by analogy with the laws applicable to extra-uterine syphilis, an embryo infected already ovularly is immune against further syphilis-infection and cannot therefore any longer be influenced by a fresh addition of syphilitic poison through the medium of the placenta. This does not by any means imply that the syphilis of the mother is not capable by the deteriorated state of nutrition under which the embryo continues its development, to react unfavourably upon the general constitution of the fœtus.

Placental infection.—The passage of syphilitic poison by way of the placenta from mother to child is absolutely established by cases in which both parents were healthy at the period of conception, and in which the mother became infected with syphilis in some way or other during the pregnancy, bringing into the world a syphilitic child. Generally speaking, a placental infection takes place in such cases only if the infection of the mother occurred at the latest in the 7th month of the pregnancy, while if the mother becomes infected later, the child is as a rule born healthy. This placental infection is no settled phenomenon in the sense that all the children whose mothers become infected with syphilis during the first months of the pregnancy must necessarily be born affected with syphilis. They very often escape such infection and it would even appear from observations made by experiments on animals in connection with other infectious diseases that the conveyance of the syphilitic poison from mother to child takes place only where the placenta is morbidly altered in some way.

This is also a reason why many authors feel inclined in cases of syphilitic disease of the mother at the time of con-

ception to assume an ovular infection of the child in the place of a placental infection. For mothers who are already syphilitically diseased before the conception impress as a rule upon their children the stamp of their affection, whereas the passage of the causative agents of syphilis through the placenta, though it can occur, is at any rate rendered difficult. At all events, the child of a mother affected with syphilis at the time of conception is doubly in danger, since, should it by some accident or other escape ovular infection, it is still liable to fall subsequently a prey to the placental infection.

That the embryo procreated by parents, both of whom were affected with syphilis before the conception, is particularly subject to be attacked by hereditary syphilis is clear, considering the triple possibility of infection through the spermatogenic fluid, the ovulum and the placental circulation, and requires no further explanation.

A transmission of syphilis from hereditary syphilitics to their descendants has not hitherto been demonstrated with certainty.

Immunity of healthy-born children of syphilitic parents.—Similarly, the question how far syphilitic infection of the parents renders those of their children who have escaped hereditary infection immune against syphilis is still the subject of a controversy. That the syphilis of the father, if it is not hereditarily transmitted to the children, does not always protect the latter from infection has been proved by observations in which such children have subsequently become infected. Nor does *Profeta's law* that healthy-born children descending from syphilitic mothers are immune against syphilis, seem to apply in all cases. At least exceptions to it have become known just as exceptions have been observed to *Colles' law*.

Moreover, the immunity where it is present seems to be of limited duration only and to become extinct as a rule during puberty. At least infections with syphilis of such children who had hitherto been regarded as immune have been observed. But hereditarily syphilitic children can also like adult syphilitics become reinfected after a time, as has been proved with

certainty by a few observations, though these are scanty in number.

That the syphilis of the parents can cause in the offspring an immunity which, though not always absolute, is certainly relative, is evidenced by a few facts, as e. g. the observation that syphilis takes on the whole a more favourable course in countries in which it is endemic, whereas, if it is introduced into places which have been formerly free from it, the results at first produced by it are most ravaging. It is further supposed that in the sporadically occurring cases of malignant syphilis, the ascendants have for several generations been quite free from syphilis.

Influence of parental syphilis on the offspring.—The influence of parental syphilis on the offspring manifests itself in different ways according to the duration of the disease in one or both of the parents, according to the sex of the procreator, and according to the treatment carried out.

The more recent the syphilis of the transmitting parent, the more easily and frequently the transmission to the embryo takes place, the more severe the form of the disease produced in the foetus. It is immaterial whether at the time of conception, phenomena in the transmitting parent are manifest or not. Although in most cases of recent syphilis in the procreator the disease is transmitted to the offspring, it does not so happen in absolutely every instance. The fact is that parents suffering from recent syphilis, even if manifesting symptoms, can generate healthy children; in some instances healthy and infected embryos appear alternately. The length of the period of hereditary transmissibility can be told beforehand with as little certainty as the duration of the infective stage altogether. The further the parental disease is removed from the term of infection, the better are the prospects of the embryo coming healthy into the world. This is perfectly clear, for hereditary transmission is after all nothing but another form of infection.

As a rule the capacity for hereditary transmission becomes extinct in the father sooner than in the mother; the latter is often still capable of transmitting syphilis to the offspring ten years, or even later, from the date of her infection. Whether

it is true that the different attitude of the generative cells which are in man, are constantly shed and renewed, while in woman they are often moulded at a very early age to remain latent in the body until they are discharged and eventually impregnated, —whether this difference explains the process sufficiently as *Lesser* endeavours to show by a very ingenious hypothesis, must for the present be left out of account, especially since *W. Stöckel* has furnished proofs that ova and follicles can continue to be yet formed in the adult woman. Possibly also insufficient anti-syphilitic treatment which many women undergo accounts for the longer duration of the maternal capacity for transmitting the disease.

Influence of treatment on the hereditary transmission.—Treatment, and particularly mercurial treatment, plays a very important part in the question of hereditary transmission. The more thoroughly a syphilitic is treated, the earlier his body is detoxicated, the sooner he loses the capacity of transmitting the disease to the offspring. It is a well-known and often-observed fact that parents, who for years have brought forth one syphilitic child after another, suddenly commence after a radical mercurial treatment to generate perfectly healthy children, and that as soon as the influence of the mercury has gone, syphilitic children are again born to them.

It has, therefore, become an established custom, as it were, to mercurialise ex-syphilitic candidates for marriage once more shortly before the wedding, in order to avert the danger of transmission to the offspring, even though the risk of direct transmission should have disappeared for some time. It is similarly advisable in families in which syphilitic children are born, to institute a fresh mercurial treatment of the responsible partner, and to persevere with the same so long as the parental disease makes itself apparent in any way in the offspring. If there is a suspicion that both parents are accountable for the syphilis of the children, treatment must be extended to both of them. Existing pregnancies offer no contra-indication in this connection.

According to the intensity of the parental syphilis, the

result is, to begin with, miscarriages; then follow premature births of non-viable embryos, frequently also of dead full-term children, and later on children are born who show already at birth or a few weeks afterwards, the well-marked combination of symptoms of hereditary syphilis; gradually come apparently healthy children which are, however, feeble and predisposed to constitutional diseases, and finally healthy ones. This is a picture furnished by many syphilitic marriages. There are, of course, exceptions to this sketch. After the birth of living syphilitic children miscarriages may occur once more, and it is also possible, as already mentioned, for births of healthy children to alternate with those of syphilitic ones. This also depends entirely upon the treatment which the syphilitic parents, or the one affected, have undergone for the avoidance of these unfortunate accidents.

Miscarriages.—The miscarriages which occur up to the 5th month, do not, generally speaking, present any symptoms characteristic of syphilis. It is not established with certainty what causes the premature death of the embryo. Morbid changes in the maternal placenta and atheromatous inflammations of the umbilical vessels are named as the principal causes.

Premature labour.—Embryos expelled prematurely after the 5th or 6th month of the pregnancy, manifest already to a great extent the changes characteristic of inherited syphilis especially those in the long bones which have been described by *Wegener* as osteo-chondritis of the epiphyses and which may go as far as total separation of the epiphyses. In extreme cases these changes are associated with articular and peri-articular abscesses and extensive proliferations of the medulla. Such embryos also show already enlargements of the liver and of other organs through interstitial proliferations, further the so-called pneumonia alba which presents gummatous formations as well as diffuse infiltration and blood-vascular alterations. Cutaneous phenomena are frequently as yet absent in these cases.

Labour at term.—The skin symptoms are, however, quite a prominent feature in full-term children and they exhibit on the whole the same character as in syphilis acquired outside

the uterus. On account of the bad state of nutrition of the newly-born infants the skin is often found to be flabby and wrinkled especially in the face, a circumstance which gives them the appearance of extremely aged individuals. The principal types of these congenital syphilitic eruptions are of a maculous, papulous and bullous nature; frequently gummata appear very early, sometimes yet intermixed with the eruptions of the earlier period. Peculiarly characteristic is the pemphigus syphiliticus neonatorum which arises through the transformation of papulous into pustulous efflorescences and through the confluence of the latter.

The nasal organ is the seat of catarrhs (coryza) and of stenoses, the latter being produced by the drying of the secretion and giving rise to the peculiar snuffling of these patients.

The diffuse syphilitic infiltration of the skin, described by *R. Mayr*, which confers to the face especially a peculiar stiffness is regarded as a sign of severe infection and so is the tendency to cutaneous hæmorrhages and to hæmorrhages of the internal organs.

On the mucous membranes, too, there appear already very early papulous efflorescences which ulcerate particularly at the passage of the mucous membrane into healthy skin producing often at the lips and at the anus fissures and excoriations. Swollen lymphatic glands are frequently observed, though not to the same extent as in adults. Very many of these children die soon after they are born, in spite of good nursing and treatment, frequently under symptoms of pyrexia from gastrointestinal catarrhs or marasmus. In others the very feeble bodies become the seat of purulent and gangrenous affections of the skin such as are usually seen to attack all cachectic children. A number of hereditarily-syphilitic children, though they overcome these dangers, retain nevertheless for a shorter or longer time, and often for the whole of their lives, a diminished resistibility against external injurious influences. The course of congenital syphilis is not on the whole materially different from that of the acquired form. In some cases the symptoms visible at birth or shortly afterwards remain the only ones during the whole life. In others secondary relapses

of the most variable kind are observed. In a number of these children tertiary phenomena of the skin, but especially also of the internal organs such as the nerves and bones, appear sooner or later; but it is hardly necessary to describe these in detail as they differ but little from the late symptoms of non-congenital syphilis.

As a pathognomonic, though not an absolutely certain sign of early congenital syphilis, is regarded the so-called triad of *Hutchinson* which includes the keratitis parenchymatosa or the corneal spots resulting from it, the labyrinthine deafness and the peculiar crescent-like erosion of the upper incisor teeth. Due to the same cause are further the choroiditis areolaris, the linear cicatrices radiating round the mouth, and finally the sword-shaped curvature of the tibia.

Late inherited syphilis.—The occurrence of a so-called late hereditary syphilis by which we understand the appearance of tertiary phenomena during puberty, or even later still, without any preceding secondary symptoms, is not yet demonstrated with certainty. The secondary complex of symptoms has in such individuals either run its course during their intra-uterine life or been overlooked at their birth and subsequently as well. Some of these patients may, perhaps, have become infected after their intra-uterine life the disease passing unrecognised and untreated.

In some of the cases para-syphilitic and meta-syphilitic phenomena are said to develop on the basis of inherited syphilis, phenomena which are in themselves neither infectious nor in any way influenced by anti-syphilitic treatment. Among such diseases are included rickets, scrofula, hydrocephalus which is frequently followed by idiocy, epilepsy and other nervous diseases of childhood, as well as the different dystrophies. Whether the above-mentioned connection exists in all these cases, it is as difficult to say with certainty as it is with regard to the para-syphilis of adults.

Birth of syphilitic children and their influence on the family life.—The birth of a syphilitic child being one of the most unfortunate events of married life is calculated to give rise to complications of different kinds. The occurrence

of several abortions alone is sufficient to attract the attention of friends and relatives, and they begin to suspect the husband who is in by far the greatest number of cases the party that brings syphilis into the married state, particularly as a suspicion of pre-connubial indiscretions is in such cases very often entertained even if there is no justification for it. But the birth of dead or living syphilitic children creates perturbations which are capable of causing great embarrassment to the diseased parent as well as to the medical attendant. Apart from the moral anguish experienced by the parent who feels guilty of the birth of a diseased child, an occurrence recalling in a cruel manner an illness long since considered, cured and done with, apart from the fear that the well-kept secret will leak out after all, there is the unpleasant serious duty which confronts the physician in attendance. He must protect the healthy inmates from infection by the diseased infant and institute the proper treatment, without revealing the secret of the syphilitic parent.

It is, of course, impossible to lay down any definite rules for the guidance of the physician in such cases as each individual case must be decided by its peculiar circumstances. The necessary tact will always find a way out of the difficulty. The requisite precautions must, however, be taken in every instance so as to prevent the infection of others.

The nutrition of syphilitic infants.—It is in the first place essential that the syphilitic child should not be suckled by a wet-nurse unless, perhaps, she, too, be syphilitic. The infant must be fed either by the mother who is, as already pointed out above, nearly always immune no matter whether she is herself syphilitic or whether she has only harboured in her uterus a fœtus which has derived the syphilis from the father, or it must be brought up artificially. This applies also to healthy-born children of manifestly syphilitic parents, because sometimes the syphilis of new-born children does not make its appearance before 2 or 3 months after their birth and an infection of the wet-nurse may then take place. The suitable nutrition of the diseased suckling must be accompanied by appropriate treatment and not infrequently one is happy

to see such children overcome successfully all the dangers of their parental heritage.

Syphilitic infection of the child during labour.

—An infection of the child seldom takes place during the labour act, and such an occurrence is, of course, possible only if the mother suffers at the time from manifest syphilis of the genital organs. Such an infection is only possible if the mother became infected after the 6th month of pregnancy. This mode of syphilitic infection of the suckling may, however, not manifest itself until several weeks after birth.

Dangers for the obstetrician and the midwife.—The labour act of women suffering from specific genital symptoms is also a source of grave danger to the attending medical man and to the midwife, who not infrequently become syphilitically infected on such occasions.

It should therefore be a legal obligation for parents who are aware of their syphilitic condition, to warn all those who take part at the confinement, that is the doctor, midwife and nurse, and to enjoin them to protect themselves against infection. Since midwives are just as much under an obligation to guard the secrets of their clients as medical men, there could be no fear of any unpleasantness arising in consequence.

Syphilis and divorce.—Whether according to the German Civil Code syphilis in one of the spouses constitutes a ground for the dissolution of the marriage—this question has been discussed by *Heller* in an elaborate article (*Berl. klin. Woch.* 1901, No. 46). From his statement it appears that syphilis as such is no ground for divorce as it cannot be included among the absolute and relative divorce-grounds dealt with by §§ 1564-1587. On the other hand syphilis may be used as an argument for the nullification of the marriage-contract.

Such nullification of the marriage-contract may be demanded, according to *Hellwig*¹ (*Die civilrechtliche Bedeutung der Geschlechtskrankheiten, Zeitschrift fuer Bekaempfung der Geschlechtskr.* 1903, No. 1), in the first place on the

¹According to *Hellwig* it becomes however a ground for divorce: 1. if the disease has been acquired through moral guilt, e. g. adultery. 2. if insanity or injury to health or at least danger to health is a concomitant factor.

ground of error, when the following motives come into consideration: 1. The error of one spouse with respect to such qualities in the other spouse as would have deterred him or her from contracting the marriage, had he or she been aware of the real condition of affairs and properly understood the essence of married life. (§ 1333.) 2. The premeditated deception of the husband or wife by falsehoods which induced him or her to contract the marriage and the knowledge of which with a proper understanding of the main essence of marriage would have deterred him or her from contracting it.

Hellwig thinks that in cases of recent syphilis, especially if the medical opinion is to the effect that relapses are still likely to occur, the courts ought to protect the woman, who believed she was marrying a healthy man, from the dangers constantly threatening her, by granting her petition that the marriage be annulled. The decision of the court would, however, have to be different where the husband who had had himself treated properly, has not shown any symptoms for a sufficient number of years, so that, although the recrudescence of the disease cannot be considered as impossible, the probability is that a complete cure has been accomplished. In such cases the petition for the nullification of the marriage on account of error would have to be dismissed. The possibility that the probable duration of life is shorter in individuals who have formerly had syphilis, owing to their tendency to acquire other diseases, does not according to *Hellwig* possess any bearing on the point.

A premeditated deception takes place where the intended husband or wife answers knowingly and untruthfully in the negative the question addressed to him or her, whether he or she is suffering from a sexual disease. It cannot, however, be said that there is deception in the sense of § 1334 where the candidate for marriage is silent on the subject of a sexual disease from which he has formerly suffered and which he now believes to be completely cured.

In any case the candidate for marriage can according to *Hellwig* make provision against the nullification of the marriage-contract by assuring himself that the other contracting

party or her legal representative is under no misapprehension as to his former sexual disease. He must under no circumstances be guilty of any misrepresentations made to either of them.

The legal consequences of the dissolution or nullification of the marriage consist in the obligation devolving upon the guilty party to maintain suitably the innocent party in conformity with §§ 1578-1582. The spouse whose health has suffered through the infection has, besides, the right to claim damages from the other spouse, if the transmission of the disease took place in consequence of criminal negligence or by premeditation.¹

The syphilitic infection is regarded by *von Liszt* (*Der strafr. Schutz geg. Gesundheitsgefaehrung durch Geschlechtskranke*, *Zeitschr. fuer Bekaempf. der Geschlechtskrankheiten*, Vol. I., 1903) objectively as physical injury and as such subject to § 223 sq. *Liszt* proposes however the introduction of a special penal clause with the following wording: "Whoever practises sexual intercourse while knowingly suffering from a sexual disease, is liable to imprisonment for a period not exceeding two years and, in addition, to the loss of his civic rights.—Where the action has taken place between husband and wife, a prosecution can be instituted on an ex-parte application only."

¹Translator's note: The English divorce-laws do not know of any other grounds for divorce than adultery of the wife or adultery with cruelty or desertion on the part of the husband, but judicial separation is granted for cruelty only and sexual disease is under certain circumstances regarded in this light. A decree of nullity of marriage would probably not be granted on account of sexual disease, unless accompanied by physical incapacity to perform sexual intercourse, but the defect must have been existent at the time of marriage and it must be of an incurable character.—Broadly speaking this may be said with regard to the United States as well, except that where cruelty alone is regarded as a ground for divorce sexual infection is probably often included under this head.

XVI

Diseases of the Skin in Relation to Marriage

XVI

DISEASES OF THE SKIN IN RELATION TO MARRIAGE

By **R. Ledermann, M.D.** (Berlin)

The relations of diseases of the skin to the processes connected with the married state possess in so far a special importance, as they must be judged in addition to the medical and sanitary points of view also from cosmetic standpoints. Many skin affections, especially if they are situated in uncovered regions of the body, appear to the lay public not only as diseases but also as physical defects, and can in this way influence unfavourably a projected marriage. In such cases the physician is often able to intervene beneficially and to remove the obstacle by a cure of the existing evil if his advice is sought at a sufficiently early date. On the other hand it is possible for some skin-diseases which are in the eyes of the layman nothing but harmless complaints, to impress the physician as premonitory signs or as symptoms of severe affections, and to induce him to look upon a contemplated marriage as not expedient, out of regard for the probable fate of the patient himself or in the interest of his eventual family. We have only to think of pemphigus, the first bullæ of which often indicate to the experienced eye the unfavourable course of the disease. The opinion of the physician may therefore in cases of morbid states of the skin be of the utmost value to the parties contemplating matrimony. In regard to skin-diseases, however, which make their appearance in individuals already married the question is how they affect the course of the marriage, and also how the married state acts upon the course of these diseases. In infectious cases of dermatosis there is further to be considered the eventual protection of the healthy people living in proximity to the patient—above all that of the other

spouse who is most subject to the injurious contact, and that of the children.

On account of our ignorance of the etiological factors of many skin-diseases we are still without a uniform classification. For this reason I have refrained from a division of the diseases to be dealt with in this article, according to some definite standpoint, so that after taking first the infectious diseases of the skin, I shall, on the whole, though not absolutely, follow the arrangement adopted by Neisser in his text-book (*Krankheiten der Haut*, 1901. *Handbuch der prakt. Medizin.*).

1. Leprosy.

Leprosy, which outside of Europe is still very prevalent, for instance in India, China, Mexico and the Sandwich Islands, is seen in Europe in isolated places only. Norway, Spain, Bosnia and South Italy possess yet solitary, to a great extent disappearing centres. Only in Russia a further spread of the disease has within the last few decades been observed to proceed from Livonia towards the interior of the country, so that a certain amount of danger was threatening Germany from that quarter, a danger which may be said to have been averted by the precautions taken by the government.

Owing to the discovery by *Armauer Hansen*¹ of the lepra bacillus, a discovery confirmed by *Neisser*² and now universally admitted, the contagious character of the disease, which a few investigators still deny, is undoubtedly established, so that the question of the relationship between leprosy and marriage has acquired quite an especial importance. As to the manner of the transmission nothing definite is known. Particularly with regard to the place by which the virus enters into the body we are absolutely in the dark. That bacteria penetrating through an injury in the skin can lead to a development of the whole clinical picture of the disease has been proved by an incontro-

¹*Armauer Hansen*, *Bacillus Leprae*, *Virch. Arch.* Vol. LXXIX.

²*A. Neisser*, *Zur Aetiol. der Lepra*. *Bresl. ärztl. Zeitschr.* 1879, No. 20 u. 21. *Lepra*, *Ziemssens Handb. d. spec. Path. u. Ther.* Vol. XIX.

vertible inoculation-experiment which *Arning* made on an inhabitant of the Sandwich Islands. But it is just possible that this form of the conveyance of the disease is one out of the many which actually do occur. Infections through the inhalation of the virus by the nose belong as much to the range of possibilities as does the introduction of the poison through the medium of the digestive tract, so that the fish-theory still advocated very vigorously by *Hutchinson*¹ acquires according to our modern ideas a somewhat greater justification since we can very well imagine fish and other articles of food as intermediate carriers of bacteria. The fact is, and there are numerous observations at our disposal to prove it, that leprosy can be transmitted from person to person, and those patients particularly seem to be a source of danger to those coming in contact with them, who have suppurating nodules on the skin or who, being affected with the pulmonary form, cough out large masses of bacilli which get scattered among the people in the immediate neighbourhood. Less dangerous, on the other hand, are those patients who suffer from the so-called *lepra anæsthetica* in whom the bacilli are concealed in the nerve-sheaths or nerve-fibres so that they can reach the outer world with great difficulty only. That, nevertheless, fewer people are as a matter of fact infected in leprous centres than one would expect, that notwithstanding close cohabitation with leprous individuals extending over many years it very often happens that husbands, wives and other relatives, even if occupying the same beds as the patients, remain healthy, is not by any means evidence against the contagiousness of the disease. It rather tends to prove that a large number of people are happily immune against leprosy, that an especial predisposition to the receptiveness of the poison must be present, a predisposition, however, which cannot unfortunately be recognised by visible means. That climatic influences and the condition of the soil are also not without significance to the development of leprous affections is very probable and not denied

¹*J. Hutchinson*, Notes on acquired leprosy as observed in England. Brit. med. Journ. 1899. *J. Hutchinson*, Report on leprosy in South Africa. *Lepra Bibliothek intern.* 1902. Vol. II.

by even the fiercest supporters of the contagion-theory. But this influence can always be so interpreted that the telluric conditions can create or increase the predisposition of the organism to the reception of the bacteria.

Propagation of leprosy through marriages.—

Since the treatment of the disease has hitherto remained quite hopeless, the sole possibility of preventing a further dissemination of leprosy lies in the strictest separation of the diseased from the healthy. Patients in whom leprosy has been established must therefore be dissuaded most emphatically from getting married, as the danger of the healthy members of the future family being attacked by the disease is always present, although in point of fact many statistics show that such danger is very small. Thus f. i. the Indian commission for the investigation of leprosy could demonstrate a transmission of the disease from one married partner to the other in only 2.5% of the cases, and only where the marriages have lasted more than 5 years did the figure go up to 5%. *Münch*¹ gives the percentage as 11%; *Sand*² saw in 478 marriages between leprosy and non-leprosy individuals only 15 cases where husband and wife were affected; out of these the husband transmitted the infection in 5 cases, and the wife in 10, so that in 97% of the cases no demonstrable infection took place. *Blaschko*³ found among 25 patients in the Memel district 12 married persons, but in not a single case could he demonstrate a transmission to the healthy spouse, whereas in 3 cases the leprosy had been transmitted to the offspring. If the transmission from husband to wife, or vice-versâ, seems therefore to take place rarely, it is nevertheless possible, and this possibility alone suffices to make the adoption of the above standpoint necessary.

Prohibition of marriage.—Whether any practical results could be obtained by legal enactments, f. i. a prohibition of marriages between leprosy and healthy persons, as demanded by *Lovell*, *Poup*, *de Valencé* and others, would appear from the experiences collected so far to be rather doubt-

¹*Münch*, Leprosy in South Russia. Kiew 1889. (Russian.)

²*Sand*, Beobacht. über Leprosy (Leprosy vol III. Fasc. 1, 1903).

³*Blaschko*, Die Leprosy im Kreise Memel. 1897.

ful. An attempt in that direction which was made according to *Münch*¹ in a small Russian district proved futile. At the instigation of the Caucasian medical committee, all the priests of the Terek district were enjoined to prohibit the marriages of all those in whose ancestors' leprosy had demonstrably been present, even though the grandparents exclusively had been affected. The forging of certificates, irregular marriages and other similar evils became so rampant that the edict prohibiting the marriages had to be revoked.

Inherited leprosy.—The question of the hereditary transmissibility of leprosy cannot be answered definitely either in an affirmative or a negative manner. As the generative apparatus is often severely affected though the sexual desire remains intact for some time, we cannot theoretically and by comparison with other infectious diseases, f. i. syphilis, dismiss the possibility altogether. And besides there are also a few positive data in favour of this view which is advocated principally by *Danielsen* and *Boeck*. In practice, however, this point plays a smaller rôle than the danger of infection from diseased parents, brothers or sisters. On this account too, the advice is justified exhorting leprous individuals not to marry; for, supposing even that hereditary transmission does not take place in the majority of the cases, the children though born healthy are nevertheless subject to the danger of infection where one or both of the parents are diseased, so long as they remain under the same roof or in contact with them.

Isolation of the patients.—If one of the members of a family is attacked by leprosy, a strict separation of the patient from those around him ought to take place. Where the patient's position allows him to carry out that separation in his own house, and if he is sensible enough to conform himself to the instructions on the point laid down by his medical adviser and to submit to the recommendations of the individuals entrusted with the task of nursing him, the danger of infection incurred by those living under the same roof is

¹The history of leprosy in the Terek region. Kiew 1894. (Russian.) See *A. v. Bergmann*, *Die Lepra*. Stuttgart, 1897.

so slight that there is no necessity for precautionary arrangements on the part of the authorities. But where these guarantees are wanting, the State has not only a right, but it is its duty, to protect the imperilled family and the entire surroundings of the patient in a wider sense against the risk of contagion, by a compulsory removal of the diseased person to a special institution for leprous individuals, and thus to avert the spread of leprosy in the whole of the threatened locality. If leprosy attacks either the husband or the wife at a time when the children are still young the latter should be taken away from the house as soon as possible and placed under conditions which preclude the possibility of an infection. There would even be no exaggeration in the demand that such children be reared and observed in some public institution for a number of years, since, considering the long incubation-period of the disease, it is possible for them to harbour its virus for many years before any symptoms make themselves manifest. Above everything it is necessary, if one of the children of an otherwise healthy family becomes attacked, to provide for its strict separation from its brothers and sisters, as the disease is transmitted far more easily between brothers and sisters than between husband and wife. Maybe the reason is to be looked for in the circumstance, as *Blaschko* points out in his remarks on the Memel epidemic, that brothers and sisters being consanguineously related, are far more often equally constituted and predisposed to the same diseases than husbands and wives.

Duty of the physician in the presence of leprosy.—From the above observations it follows that the duty of the physician in the presence of a leprous candidate for marriage is to explain in the frankest possible manner the danger threatening the future family. Where leprosy has become manifest in one of the members of a family, a voluntary or, if necessary, compulsory isolation of the patient, affords the best protection against this terrible disease which is absolutely unamenable to therapeutic treatment.

2. Tuberculosis of the skin.

As the acute forms of skin-tuberculosis constitute almost exclusively only a part-symptom of a tuberculous disease situated in some other part of the body, we shall consider here first the chronic forms.

Among these is included in the first place lupus, the tuberculous nature of which is now universally recognised, and the tuberculosis cutis verrucosa; secondly, scrophuloderma and the tuberculosis cutis fungosa of *Riehl*, which is closely allied to it, and thirdly, lichen scrophulosorum.

Lupus vulgaris.—Lupus vulgaris is a disease with a very chronic course which begins as a rule during childhood but which may make its appearance at any time of life. A primary commencement at a marriageable age or in married persons is therefore at any rate rare. As a family-disease lupus does not play a special part, since no cases of hereditary affection or direct contagion from the lupoid focus to the skin of a healthy individual have become known. Nevertheless the infections with lupus of which we do know have been caused by a transmission of tuberculous material which came not from a skin affected with lupus but from some other tuberculous focus. In brothers and sisters lupus is seen only exceptionally; but very often children with lupus are descended from tuberculous individuals who have not themselves suffered from lupus (*Leloir*,¹ *Raudnitz*²).

It may therefore be said that the tuberculosis of one or both parents imparts to their children a certain predisposition for the reception of tubercle bacilli in the skin, and as a matter of fact tuberculosis in the ascendants has been established in half the number of all the cases of lupus. On the other hand it is not proved whether patients affected with primary tuberculosis of the internal organs are particularly predisposed to lupus. More frequently it happens that patients with lupus

¹*Leloir*, Traité pratique theor. et therap. de la scrophulo-tub. de la peau et des muqueuses adjac. Paris 1892.

²*Raudnitz*, Zur Actiologie des Lupus vulgaris. Arch. f. Dermatol. 1892.

are attacked later by other tuberculous diseases, hence the saying of *Besnier*: Les lupiques deviennent fréquemment tuberculeux. (Lupus-patients frequently become tuberculous.)

It is known, however, that scrofula¹ plays a considerable rôle in the history of sufferers from lupus, seeing that a scrofulous condition offers in all respects a suitable soil for the growth and development of the most various forms of cutaneous tuberculosis.

Origin of lupus.—For the mode of origin of lupus we have 3 explanations which do not exclude one another and each of which is now and then admissible. The first; regarded by *Baumgarten*² as the only mode of infection, is the infection by metastases through the intermediary of the blood-vascular and lymphatic circulations, and is known also as hæmatogenic infection. More frequent is the infection per contiguitatem which consists of a direct contagion from tuberculous processes in glands, joints and bones to the surface of the skin. It is also possible for tuberculous skin-affections, f. i. scrophuloderma, to become occasionally the starting-point of a regional lupoid infection.

These two modes of origin of lupus which may also be described as endogenous are not of any particular consequence to the question of their relationship to the married state, as they are only secondary manifestations of a tuberculosis situated in some other portion of the organism, and as their prognosis depends in the first instance from the condition of the primary seat of the tuberculous virus.

Far more important from our present point of view is the third mode of infection through inoculation, which although it has not yet been demonstrated by experiments on animals, is supported by so many clinical facts and observations that there can hardly be any doubt as to its occurrence. And seeing that the intimate companionship of married life offers the most favourable opportunities for the transmission of infectious diseases of all kinds, we will devote a little more attention to this mode of origin of lupus.

¹See Chapter VIII. *Senator's* article, p. 290.

²Lehrb. der pathol. Mycologie. 1890.

Consent to marriage.—The question whether a person affected with lupus may marry can only be answered in each individual case, as lupus is a disease which may be cured, in rare cases spontaneously, and more often by appropriate treatment. Permanent cures are doubtless known, although they are not exactly very frequent.

So the case may arise of a former lupus-patient who is still reminded of his old disease by, perhaps, nothing more than a slightly disfiguring scar and who wishes to get married, addressing in all conscience to his doctor the query whether the disease is really cured and whether he may take the contemplated step without possible or probable injury to his own person, to that of his future partner or his eventual progeny. What should be the attitude of the doctor in such a case?—If the case is that of an individual in whom a most careful examination reveals no signs whatever of a tuberculous or any other disease, if the period of the acute stage of the disease has long since passed, if the patient has neither tuberculous habit of body nor a family history of tuberculosis and if there is no evidence of scrofula, there is the less need to withhold the consent to the contemplated marriage, as experience teaches that the regular mode of life and the better conditions of nutrition resulting from the married state are productive of better health and often of a higher life-duration than the unmarried state. Such a patient must be judged somewhat similarly to an individual who has had formerly catarrh of the apex,¹ or like one who was formerly scrofulous and in whom the scars left behind in the glands are the only signs of the old disease, or like persons with other forms of a pre-existent and now healed tuberculous affection. Of importance is certainly the proof that the lupus-scar does not really contain any more diseased tissue, that there are no more nodules slumbering deeper down, or that a lupus sclerosus in which the tuberculosis is seated in the deeper layers of the cutis and which may extend sometimes as far as the subcutaneous connective tissue, is not simulating a cicatrised lupus-scar. Though an experienced eye is generally in a position

¹See Kaminer's article, p. 390.

to remove many a doubt in this connection, it is nevertheless necessary to have recourse to other aids as well in order to make sure of these very important points. Occasionally it is possible by means of *Liebreich-Unna's* glass-pressure-method and the artificial anæmia thus produced, to discover yet nodules at the border of such a lupus-scar which would otherwise, in the normally-looking, or, as it frequently is at the border, hyperæmic cutaneous tissue, have escaped even the most scrupulous observation.

More reliable results than by these methods can be obtained by the employment of tuberculin. *Neisser*,¹ at least, believes that with regard to skin-affections, one can safely lay down the rule that all those affections which react to tuberculin in a typical manner, belong to tuberculosis, and that affections which manifest no reaction, are of a non-tuberculous nature.

The tuberculin reaction shows therefore, according to *Neisser's* experiences, how far down lupus deposits have already proliferated into the apparently still healthy surrounding tissue. In skin-diseases tuberculin can thus sometimes furnish valuable information with regard to seemingly cured cases of lupus and in this way be of assistance in the formation of an opinion as to the permissibility of a marriage.² If the scar contains yet hidden remains of lupus the candidate for marriage must be judged according to the same principles as would apply to any other sufferer from lupus, a point to which we shall have occasion to refer again later on.

As lupus-scars are capable of leading by inversion of the eyelids, by cicatricial contractions of the mouth or of the nasal opening, or by the creation of flexures which impede the free use of the organs concerned, to all kinds of deformities, the assistance of the surgeon is occasionally invoked by candidates for marriage for cosmetic reasons. Occasionally by injections of thiosinamin, but more often by the knife of the skilful operator, it is possible to remove existent functional disturbances or æsthetic objections and thus to eliminate what obstacles there are to the consummation of a contemplated marriage.

¹Die tubercul. Hauterkr. Deutsche Klin. 1902.

²See *Kammer*, p. 389.

We may therefore conclude that where the lupus is completely cured, where its consequential results have been removed, and where the general health of the candidate for marriage is otherwise intact, there is no occasion for the physician to offer any objection against the contraction of a marriage.

The matter is of course different if there are still manifest lupus deposits existing. The size and number of the diseased spots, their local situation, the nature of the disturbance produced will in each individual case influence the decision of the physician as to whether the marriage of a lupous individual with a healthy one is from a medical point of view permissible. The doctor will have to ask himself first of all whether a lupus-patient can on account of his infectiveness which may in his particular case be especially great prove a source of danger to his future wife and family. We have already mentioned that the transmission of infections from lupus-deposits to healthy persons has not hitherto become known, that in the so-called inoculation-lupus the contagion has always consisted of a conveyance of tuberculous material coming from other parts to the healthy skin; and although we cannot, seeing that the nodules have been proved to contain bacilli, straight away dismiss the theoretical possibility that such an infection, especially from ulcerated lupus-centres may occur, the risk of infection is nevertheless as an obstacle to marriage of far less importance than other dangerous factors which play in connection with the question interesting us here an unequally greater rôle.

In cases of rather extensive and acute lupus in which the disease is spread over large surfaces of skin, or where mucous membranes are affected, or, finally, where more or less severe destruction of the skin has produced prominent disfigurements, the doctor will only very rarely be called upon for an opinion relating to marriage. Besides, most lupous patients, the great majority of whom belong to the poorer classes, are not in such favourable pecuniary circumstances as to be in a position to establish a household. And though many of them are perfectly able to work, they cannot, as *Neisser* has pointed out, find anybody to give them employment and they are shunned by everybody on account of their repulsive appearance. Should how-

ever the question of marriageableness from a medical point of view happen to arise in such a case nevertheless, the doctor would have no alternative but to decide the same in a negative sense. A lupous patient whose illness has, perhaps, in spite of medical treatment assumed the proportions indicated above, has only very rarely a chance of being cured of the same permanently. On the contrary, he is always threatened by a number of dangers which medical skill cannot possibly avert. Such patients are always running the risk of being attacked by other forms of tuberculosis and in point of fact the greatest number of lupus-patients succumb finally to pulmonary tuberculosis. It has even happened occasionally that surgical measures, such as the scraping of lupoid deposits, have caused bacilli to penetrate into the opened venous circulation producing in this way an acute miliary tuberculosis leading to a fatal issue. The diseased skin of a lupus-patient forms also very often the starting-point of many other disturbances; it facilitates the settlement of staphylococci and streptococci. Particularly often erysipelas finds here a suitable medium for its development and a soil favouring its frequent recurrence which may cause elephantiasis and chronic induration of the cutaneous connective tissue. Finally, malignant tumours such as carcinomata and angio-sarcomata may form on such lupoid deposits. All these possibilities are sufficient reasons to impose upon the physician the duty to refuse his consent to the marriage of individuals with severe lupus.

Patients with small circumscribed lupoid deposits offer, if they are otherwise free from tuberculosis far less occasion for apprehension, especially if the diseased foci have existed already for a long time and if they have grown only very slowly or come to a standstill in their development altogether. For all that, they are, even though the seat of the disease be confined to a small portion of the skin only, liable to all the eventualities just discussed, as we know that every small focus can suddenly become the starting-point of a fresh development of the disease. To a lupus-patient thus situated we must therefore proffer the advice if he desires to get married, to wait first until the lupus deposits have been cured. Unfortunately in many cases—if

we do not succeed by a radical extirpation in achieving a rapid cure—the healing process is such a slow and tedious one that by this fact alone the contemplated marriage often becomes illusory. This applies especially to the lupus of mucous membranes which can only with very great difficulty be brought to a favourable issue. But when the cure is achieved, and if after complete cicatrization of the respective places the tuberculin-test also does not reveal any signs of an internal or external tuberculosis, we can without injury to our professional responsibility consent to the projected marriage.

Course of lupus during the married state.

—There is little to add to what has already been said respecting the course of lupus during the married state and the influence of married life as such upon lupus. Married people are only rarely attacked by lupus, since the disease appears most frequently during childhood. Nevertheless, as we have already seen fresh cases do occur at later periods of life as well. The danger of the disease being transferred from one married partner to the other is, excepting where the seat of the affection lies in the region of the genital organs, a very remote one notwithstanding the close cohabitation, and is very likely present only if the patient suffers also from other forms of tuberculosis from which an infection may possibly arise. The probability is also small that the disease can be transmitted hereditarily or through infection to the offspring. It is of course possible for a predisposition to subsequent tuberculous diseases to be transmitted by one of the parents who suffers from tuberculosis in some shape or other. (Compare *Kaminer's* article in this work.) This danger is however greater with regard to all the other tuberculous diseases of the parents than with regard to lupus, provided, again, that the latter represents the only form of the parental tuberculosis. That married life should under normal circumstances act injuriously upon a case of lupus is hardly to be expected, especially as lupus-patients enjoy as a rule for a long period of their lives otherwise unexceptionable health. But, of course, intercurrent and debilitating diseases may influence lupus unfavourably as they can every form of tuberculosis. In this connection we must mention especially,

severe labours and puerperal diseases, whereas normal pregnancies and confinements are generally without any ill-effect on the course and development of lupus.

The offspring.—As regards, finally, the offspring of lupus-patients, experience teaches that such children are as a rule born healthy and that they can remain healthy for the whole of their lives. In view, however, of the possibility that they may possess a special predisposition to tuberculous diseases, they should be freed as quickly as possible of all such conditions as favour the origin of inoculation-lupus, for instance, itching skin-eruptions and catarrhs of mucous membranes which become so often the open door for the entrance of tubercle bacilli.

On the subject of the other forms of chronic tuberculosis of the skin and their relationship to the married state there is no need to dwell at very great length, since many of the points arising with regard to them have already been considered in connection with lupus.

Tuberculosis verrucosa cutis.—The tuberculosis verrucosa cutis (*Riehl-Paltauf*) which is a form of lupus or at any rate closely allied to it, represents a real kind of inoculation-tuberculosis and is observed especially in people who have to handle animal, and therefore often tuberculous offal. As it attacks for the most part healthy individuals who do not suffer from any other form of tuberculosis, and as the affection can be removed by surgical means, the tendency to spread further being also small, no other necessity arises for the physician when approached by a candidate for marriage than to relieve the latter of his complaint first. Or, if the patient refuses on account of the slight discomfort which the affection causes him to submit to a surgical operation his attention must be called to the tuberculous nature of the tumour and to the dangers which may possibly arise from it. If the affection makes its appearance in a married individual the sole duty of the physician is to institute the necessary appropriate treatment.

Scrophuloderma.—Less favourable, though also not absolutely unfavourable, are the conditions in another form

of chronic tuberculosis of the skin, the so-called scrophuloderma (gumma scrophulosum, *Neisser*; colliquative tuberculosis of the skin, *Jadassohn*) in which is also included the affection described by *Riehl* as tuberculosis fungosa (fungus cutis). Here there develop either primarily in the sub-cutaneous connective tissue or secondarily from scrofulous glands and more rarely from bony substance nodules which become fused with the skin, and which when they finally burst, lead to more or less extensive ulcerations with undermined borders. As already mentioned, lupous centres may, in association, arise in the neighbourhood of these ulcerations as may also, by means of the lymph-vascular circulation, fresh tuberculous deposits—representing in any case a dissemination of the tuberculous virus. The granting of the consent to the marriage of a patient suffering from scrophuloderma depends therefore entirely upon the manner of its commencement and the form of its distribution. In the primary occurrence the prospects of a cure, which, by the bye, may in rare cases happen spontaneously as well, are much brighter than in the secondary forms in which the cutaneous affection is only a part-symptom of some other tuberculosis. A patient with primary scrophuloderma will in the first instance have to be recommended to obtain relief from his affection by surgical means before taking the contemplated step. In the case of scrophuloderma of a secondary character the possibility of eventually consenting to the marriage must depend upon whether all the centres of the disease can be annihilated, and this situation must be explained to the patient. Seeing that such success will not often be obtained, the better course in the majority of cases is for the physician to dissuade from the contemplated marriage straight away. In view of the tuberculous character of the scrophuloderma-ulcer it is also necessary, if married persons get attacked by the disease, to recommend them to see that they get rid of the complaint as quickly as possible considering that they run the risk of conveying it to others. At any rate the precaution must be taken by carefully bandaging the ulcer to prevent the spread of the tubercle bacilli in other parts of the patient's body or among his healthy cohabitants. Scrophuloderma during childhood seldom occurs

primarily, but is nearly always the result of a scrofulo-tuberculous diathesis which must be combated in the first instance. It is therefore necessary in such cases to adopt the principles which apply to the prevention of tuberculosis generally.

Lichen scrophulosorum.—Lichen scrophulosorum, or better called, according to *Neisser's* suggestion, tuberculosis milio-papulosa aggregata is now, since *Jacoby* and *H'olff* have proved the presence of tubercle bacilli in the little nodules, also regarded as a special form of cutaneous tuberculosis. Since the affection occurs almost exclusively in children, and always in consequence of scrophulo-tuberculosis elsewhere, and as it is as a rule curable, it cannot be said to have any bearing on our subject.

The acute forms of skin-tuberculosis, the tuberculosis cutis propria sive miliaris ulcerosa, further the rare acute miliary tuberculosis, can equally be left out of the discussion in this place since, being consequences of an internal tuberculosis which is often already far advanced, they are of decidedly less importance than the causal disease.

Tuberculides.—If we mention yet briefly in this connection that an entire series of skin-affections which are still imperfectly understood in their clinical characters such as folliculitis, acneitis, erythema induratum (*Bazin*), and others, have under the designation of tuberculides been included among the tuberculous dermatoses on the ground that they are not caused by the direct action of the tubercle bacilli but by that of their toxins, we can at the same time point out that as long as these affections are consequential symptoms of a tuberculosis which is either manifestly or latently present in some part of the body, they cannot for themselves claim any significance with respect to the questions interesting us in this work. Their prognosis depends entirely on the state of the primary tuberculosis. If a direct connection with a tuberculosis elsewhere cannot be established, it behoves us to be careful how we interpret such morbid processes which are clinically not yet sharply defined, especially as a quite favourable course of these affections has at times been observed. At any rate the prognosis should on no account be declared as absolutely bad.

influencing thereby injuriously the fate of candidates for marriage erroneously and prematurely, without a most comprehensive observation and without proving the presence in the body of other undoubted tuberculous changes.

3. *Rhinoscleroma.*

Rhinoscleroma, the infectious nature of which has since the discovery of a specific bacillus (*v. Frisch*) received general recognition, is a chronic swelling which occurs in persons of middle age, usually at first on the nose, affecting subsequently very often the mouth and pharynx, the larynx and neighbouring parts, and which may cause by adhesions and infiltrations permanent stenoses of the upper respiratory passages. Although the complaint does not for many years inconvenience the general health, the prognosis is nevertheless unfavourable, as conditions which are dangerous to life may be created through the secondary cicatricial alterations. The disease is absolutely incurable. It is this circumstance which is by far more important to the question of the eventual marriage of a person thus affected, than the danger of infection for others which must a priori be assumed. A transmission of the micro-organisms from one person to another has not become known and inoculation-experiments on animals have with the exception of a single positive one by *Stepanow*¹ proved futile. Endemic occurrence of the disease, too, has only been observed in a few countries such as in the south-west of Russia, the eastern provinces of Austria and in Central America, without there being any occasion to assume a transmission from person to person. Neither are there any satisfactory observations to speak for an hereditary predisposition. In only one case reported by *Secretan*² scleroma has been observed in two brothers. If the disease makes therefore its appearance in an individual already married the other spouse and the children

¹*Stepanow*, Zur patholog. Anatomie und Histol. des Scleroms. Monatsschrift f. Ohrenheilk. 1894.

²*Secretan*, Le rhinosclerom en Suisse. Anal. de Mal. de l'Oreille etc. 1894.

are less endangered than the patient himself who cannot on account of the progressive character of the affection expect it to become cured. Nevertheless the patient often remains for many years able to follow his employment and to work for the maintenance of his family, as the disease progresses but very slowly and gradually.

4. *Glanders and Anthrax.*

Glanders in its acute form causes death within a few weeks, in its chronic form, which may not appear until some months have passed since the infection occurred, after some years. Acute glanders cannot, of course, ever become the subject of a consultation with respect to a contemplated marriage. If a husband or wife or any other member of a family falls ill with acute glanders complete isolation of the patient and disinfection of the linen and other articles in use must be insisted upon on account of the great danger of infection. Chronic glanders is also not likely to come up for consideration in connection with the subject of marriage as the occasionally recurring periods of remission last as a rule only a very short time. During these temporary improvements there must not be a relaxation in the precautionary measures of prophylaxis, since the glanders bacilli may remain for years in the body with their virulence undiminished.

Like all the other diseases which arise and progress acutely anthrax may well be omitted from our present observations.

5. *Actinomycosis.*

As the prognosis of genuine actinomycosis of the skin is in so far as it is accessible to the surgeon's knife favourable, the necessary attitude of the patients before or after marriage is obvious. Here also transmissions from person to person are unknown. The etiological factor principally accused is injury through grain containing actinomycetes. If actinomycosis of the skin makes its way into the deeper organs

or if it combines with a disease of the latter, the prospect of a cure and therefore of getting married later on becomes naturally very uncertain. Where the disease makes its appearance in married persons or members of a family it is best for precaution's sake to keep apart all the articles used by the patient, to burn all bandages, etc., so as to prevent an infection of other persons, which although it has not as yet been observed in practice is theoretically very well imaginable.

6. *Dermatomycoses.*

The relations of the married state to the real dermatomycoses, that is: favus, herpes tonsurans in its various forms, and pityriasis versicolor, require only mentioning in brief, as the contagious character of these affections is too well known to cause any difficulties in correctly gauging the situation.

Favus.—Favus is principally a disease of childhood and is only very rarely observed in married individuals. The cutaneous atrophies and scars left behind may in association with the loss of hair occasionally give rise to cosmetic troubles and constitute an obstacle to a marriage, but the assistance of the physician will hardly ever be requested in such cases. Should favus exceptionally attack a married person the common use of all utensils must immediately be prohibited and the appropriate treatment instituted.

Herpes tonsurans.—Herpes tonsurans presents a greater danger of infection than favus, the transmission of which presupposes after all a certain amount of predisposition on the part of the skin. If the disease attacks an unmarried individual it must, of course, be cured first before the sufferer can think of marriage. Where the attacked person is a married man or woman the most careful precautions must be taken to prevent a further spread of the infection. The general way in which men become infected is that they carry away the herpes from barbers' shops. If the disease is recognised soon enough and the requisite treatment adopted, it can be removed easily. On the other hand if it passes into the

deeper structures of the skin it forms a complaint which is most tedious and difficult to combat. Transmissions between adults through osculation, the use of sponges or towels, etc., are frequently observed, whilst the ringworm affections of children owe their origin to other varieties of fungi, and remain as a rule confined to the period of childhood. In the case of disease in married individuals the duty of the physician is therefore to insist on strict separation of persons and articles required for daily use, besides instituting the most energetic treatment.

Pityriasis rosea (*Gibert*).—Another skin-disease which is etiologically not yet completely understood, the pityriasis rosea (*Gibert*), which heals spontaneously after some time and in a few weeks if rational treatment is adopted, deserves here passing notice, as it is regarded by some authors as a form of herpes tonsurans, and by others as an independent parasitic disease. The source of the infection is supposed by *Lassar* to be contained in new underclothing which has not yet been washed, and transmissions through the medium of bathing-linen have also been reported. A conveyance from person to person has not yet been made known, except by *O. Rosenthal*,¹ who has seen it in a few children. For this reason we may consider the danger of infection as very small, though not as altogether excluded, a point of view, again, which dictates the adoption of a few necessary precautions by married individuals.

Pityriasis versicolor.—The risk of infection in pityriasis versicolor, which is a quite harmless complaint, is very insignificant. The affection occurs especially in individuals predisposed to it, who perspire freely, which explains why it is so often observed in consumptives. Transmissions from and to married partners are unknown, so that there is no need for special precautions. The same may be said with regard to erythrasma, a mycotic affection of the skin which occurs on the thighs and which is easily removable.

¹*O. Rosenthal*, Pityriasis rosea. *Encyclopaedie der Haut und Geschlechtskrankheiten*. 1900.

7. Psoriasis.

Of the etiology of psoriasis we know to-day with certainty as little as was known 28 years ago, when *Köbner*¹ explained the disease by assuming a predisposition situated in the cutaneous organs of the sufferer himself. This predisposition is as a rule demonstrably hereditary but occasionally also acquired, and it may remain latent for years, responding always to the most variable internal and local irritants by exactly this form of chronic inflammation of the skin. In the meantime numerous attempts have been made to supply better explanations in the place of the old theory of dyscrasia, such as a chronic auto-intoxication (*Gaucher*),² disturbances of nutrition (*Tomassoli*),³ excess of uric acid in the blood (*Bukley*),⁴ a functional weakness of the nervous centre regulating the nutrition of the skin (*Weil*),⁵ neuropathic proclivity (*Eulenburg*),⁶ and other forms of vasomotor neurosis. As the only definite element which is of importance with regard to the relations between the married state and psoriasis to be discussed here, most authors have found the constantly simultaneous occurrence of psoriasis among several members of the same family. This observation which is made in many cases but not without exception, has been interpreted on the one hand as an hereditary transmission of the disease and on the other as a contagion. The most plausible view is probably the compromise-like opinion of *Neisser*,⁷ that, like in many other diseases, it is the predisposition to the disease, and not the disease itself which is inherited. This

¹*Köbner*, Zur Aetiologie des Psoriasis. Vierteljahrschr. f. Derm. 1876.
—*Köbner*. Ibidem 1867.

²*Gaucher*, Die Metastasen d. Psoriasis. Verh. d. II. Intern. Kongr. Wien 1892.

³*Tomassoli*, Die autotoxischen Keratodermiden. Hamburg 1893.

⁴*Bukley*, Are Eczema and Psoriasis Local Diseases of the Skin or are they Manifestations of Constitutional Disorders? Tr. intern. M. congr. Philadelphia 1876.

⁵*Weil*, Ziemssen's Handbuch der Hautkrankheiten.

⁶*Eulenburg*, Lehrbuch der Nervenkrankheiten.

⁷Krankheiten der Haut. 1904.

predisposition is, however, in numerous other cases certainly an acquired one. The disease itself *Neisser* regards as a parasitic affection and he draws the conclusion as to its contagious character particularly from the clinical peculiarities of the illness which resemble closely those of many other dermatomycoses. *Unna*¹ goes even further and declares psoriasis to be an extreme modification of seborrhoic eczema, in the parasitic nature of which disease he has believed now for years.

Since psoriasis is a chronic, and mostly even an incurable disease, one might feel inclined to look upon it a priori as a marriage-obstacle. But experience teaches firstly that under the psoriatic skin there lies in most cases a thoroughly healthy body, and secondly, that the complaint can by suitable treatment be as a rule held in check to such an extent that there is no occasion for it to form in itself an impediment to the marriage of the person affected with it. As regards the future family, only a few solitary cases are known in which a healthy husband or wife acquired afterwards psoriasis from a partner who was affected with it, as f. i. in a case of *McCall Anderson's*, where a husband was attacked with psoriasis after having lived for some years with his wife who was psoriatic.

These few isolated cases are, however, of no consequence when compared to the enormous number of married individuals who have remained healthy notwithstanding a prolonged cohabitation extending over years and decades with married partners suffering from psoriasis.

Greater than the risk run by a healthy husband or wife is, however, the danger to which the children of a parent affected with psoriasis are exposed, since they seem to be more susceptible to the invasion of the as yet unknown agency causing the disease, on account of the predisposition inherited also from the father or the mother. This appears to be confirmed by the frequent occurrence of the disease among several brothers and sisters of the same family, as observed e. g. by *Radcliffe Crocker*,² who saw 5 out of 7 brothers and sisters suffering

¹Handb. d. Hautkr. Prof. Mrazek, 1903.

²Compare: *S. Gross*, Psoriasis vulgaris. Handb. d. Hautkrank 1903.

from psoriasis; by *Wutzdorff*,¹ who was able to trace the disease through 4 generations; and also by other authors including myself. In many cases the disease could be demonstrated in the ascendants. This predisposition to psoriasis is not, however, propagated in a family by any means according to definite laws. It can be inherited, but this need not necessarily be the case, and it would mean going to an unjustifiable length were we to conclude from these occasional occurrences that persons with psoriasis but otherwise in good health, are not fit subjects for matrimony. The more so, since, as we know, a large number of individuals get attacked by the disease notwithstanding the absence of such a demonstrable source of origin and considering that, as already mentioned, most cases of psoriasis can, if treated properly, be kept within entirely harmless bounds. An exception is formed by the patients with that malignant form of psoriasis which takes, under the character of a *dermatitis exfoliativa universalis*, a severe course accompanied by serious disturbances in the nutrition of the skin, and by a progressive cachexia. Such individuals are debarred from marriage, as a matter of course. If the psoriasis is associated with gout and affections of the joints, the more serious evil is the one which will be conclusive for the formation of a decision on the point.—Pregnancy and puerperium do not seem to exercise any particular influence upon an existing psoriasis.

8. *Lichen ruber.*

With regard to the etiology of lichen ruber we know as little that is positive as we do with regard to that of psoriasis. There are on the one hand the supporters of the neuropathic theory, on the other those of the parasitic theory. Practically at least, the parasitic character, should it at any time be confirmed by a positive discovery of fungi, is from the point of view of marriage or of married life of no consequence. The

¹*Wutzdorff*, Beiträge z. Aetiologie d. Psoriasis. Vierteljahrsschr. f. Derm. 1876.

isolated cases in which brothers and sisters have been attacked by lichen ruber—there is nothing at all known of the disease having attacked both husband and wife—do not permit any conclusions to be drawn that the contagion takes place easily. Of more importance is the fact that sometimes disturbances can arise through the clinical picture of lichen ruber which may cause a temporary obstacle to marriage or, like any other severe disease, perturb the course of married life. This applies especially to the lichen ruber acuminatus—a disease accompanied by severe itching and often by serious disturbances of the general health, and which has even been known to end fatally in the absence of suitable treatment. Considering the uncertainty of the prognosis, it will be possible to consent to the contemplated marriage of an individual affected with the disease, only if the latter has been absolutely cured, a result which can always be achieved by an energetic course of arsenic.

An affection similar to lichen ruber acuminatus, the *pityriasis rubra pilaris* (Devergie), which is by some authors identified with it, and by others regarded as an independent disease, offers in spite of its chronic course, even if spread all over the body, a much more favourable prognosis, especially as it does not affect at all the general health. It would not therefore, apart from æsthetic reasons, which it must be admitted are sometimes rather serious, constitute a marriage-obstacle, if the diagnosis were not often difficult to make, and a distinction from lichen ruber acuminatus at times impossible. Under the circumstances it is therefore better to recommend the patients to await first the completion of the cure, which, it is true, is often very slow, before taking the intended step.

Lichen ruber planus is a disease which can, as a rule, be cured by arsenic in the course of a few months, and which causes only exceptionally disturbances of the general health of a serious character, or an unfavourable issue. A temporary marriage-obstacle may, apart from the external appearance due to a universal spread all over the skin, be formed, perhaps, by the frequently violent itching, which, however, disappears in the cases taking a favourable course, with the vanishing of the visible cutaneous phenomena.

A more obstinate form of lichen ruber is the *lichen verrucosus sive corneus*, which often requires in addition to arsenical treatment external remedies and even surgical operations. It can, like the other manifest forms of lichen ruber, when the affection assumes extreme degrees, produce all those disturbances which are caused by every serious disease in a member of a family.

9. Zoonoses.

Among the zoonoses generally, *scabies* and *pediculosis* in their different forms play an important part, as on account of their easily effected transmission they are disseminated not only by the conjugal intercourse and the cohabitation of the married couples, but also by the infection of children from their parents and vice-versâ. As they can be removed within a few days, a rapid and thorough treatment of all the parties affected is the most important standpoint to be taken up in this connection. As part of the treatment must be regarded a careful disinfection of the clothes and underlinen, as these often form the starting-point of a fresh infection.

10. Essential angio-neuroses.

While the anæmias of the skin, being secondary phenomena of other cutaneous or internal diseases, do not require special consideration in this place, the *congestive hyperæmia*, which is in its mildest form designated as *erythema pudoris*, deserves mentioning briefly. In consequence of a strong sensitiveness of the vaso-motor centre there easily occurs in a number of neuropathically inclined individuals blushing of so marked a character as to cause to the persons thus affected most embarrassing situations in their daily social life. Appearing outwardly in the form of shyness the affection can gradually, owing to the constant fear that blushing may occur at any moment, almost assume the character of a psychical illness. Young men, including many sexual neurasthenics, who are matrimonially disposed can often not sum up sufficient courage

to declare themselves and lose thus the chance to get rid of their complaint, for during the married state with its regulated sexual conditions the uncomfortable affection which *Eulenburg* includes among the essential angio-neuroses as a rule disappears.

11. Congestive hyperaemia. Varices.

Among the congestive hyperæmias, *varices* (dilatations of the veins) have in so far a certain relationship to the married state as they are frequently observed in women in connection with child-bearing and as they can sometimes by their consequential results, such as ulcers on the leg and chronic eczema, give rise to very tedious and even dangerous conditions. If they are situated at the female genital organs the varicose veins may prevent cohabitation. Occasionally traumatic hæmorrhages from such varicose veins have been observed. (Compare with Chapter X., section III.)

Rosacea,¹ a passive hyperæmia with dilatation of the veins which arises partly from inflammatory processes, especially seborrhœa, and partly in connection with affections of the nasal cavity, in women sometimes reflexly by diseases of the sexual organs, is generally of minor importance with regard to marriage, for the reason that it occurs as a rule at a time of life when the majority of those subject to it are already married or too old to think of marriage. For this reason the disfiguring nasal nodules which occur occasionally in combinations of rosacea and acne (*rhinophyma*¹) are also not likely to form very often cosmetic objections to the contraction of a marriage. If rosacea does appear in young individuals, the medical aspects influencing the decision as to the existence of a marriage-obstacle must give way to æsthetic reasons.

A third form of passive hyperæmia caused by cold—*chilblains*²—is frequently observed in connection with primary chlorosis and anæmia, the relations between which and marriage are discussed in another chapter. The mutilations which remain

¹Compare Jacobi's *Dermachromes*, plate XLVI.

²Compare Jacobi's *Dermachromes*, plate VII.

behind after frostbites of the third degree can occasionally constitute cosmetic marriage-obstacles. In rare cases these organic mutilations can, if they affect whole extremities, impair the earning capacity of an individual, producing thereby conditions which are capable of preventing the consummation of a contemplated marriage or of causing material injury to a marriage already consummated.

12. Elephantiasis.

Elephantiasis is, according to a definition by *Luithlen*, a chronic disease ushered in as a rule by inflammatory phenomena, which leads among circulatory disturbances especially in the lymphatic vessels to swellings in certain parts of the body followed by an increase in the tissues and in the volume of the diseased part. The *elephantiasis nostras* of the genitals occurs occasionally after the complete extirpation of the inguinal glands and may be the cause sometimes of preventing sexual intercourse. This is, however, in men only exceptionally the case as even a penis which is deformed by a severe swelling can often assume when erected a serviceable shape. In women with elephantiasis of the labia, coitus may easily produce rhagades and injuries which occasion the entrance of inflammatory exciting agents and lead to suppuration and crysipelas. In rare cases an obstruction to labour may also be caused in this way.

All these disagreeable conditions are observed in a higher degree in the *elephantiasis Arabum* which can lead to an extraordinary increase in the size of the genitals. Thus *Reyer*¹ describes how the impossibility to gratify the sexual desire often causes to the patients the greatest torments. The procreative-ness is, so long as copulation is possible, not impaired; thus in a case of *Clot Bey*¹ the patient begat two children notwithstanding a scrotum weighing 110 pounds.

It is clear that a high degree of elephantiasis of the genitals in unmarried individuals constitutes, where the impotentia

¹Compare with *Luithlen*. loc. cit.

cœundi is established beyond a doubt, an absolute obstacle to marriage.

The relations between elephantiasis situated elsewhere and the married state must also be judged according to the primary cause as well as according to the local condition, that is, from sanitary as well as from æsthetic points of view. In this connection we must not, however, lose sight of the guiding fact that a return to a perfectly normal state of affairs is in most cases impossible.

13. Eczema.

Although eczema is at the present day interpreted by some prominent dermatologists (*Unna*,¹ *Neisser*²) in the sense of a bacterial dermatosis, the occurrence of the infection seems to be dependent upon the presence of certain cutaneous injuries. At any rate this infection takes place only under certain predisposing conditions which in many cases we do not know. It follows therefore that the danger of transmission to others, even in those forms of eczema which have always been characterised as mycotic and among which the seborrhœic eczema minutely described by *Unna* is included, can only be a very insignificant one. *Unna*³ himself says that the cases which present themselves to the clinician as transmissions from person to person, f. i. from the face of a child affected with moist eczema on to the breast or arm of the mother or nurse, are rare; similarly, the epidemics of dry eczema of the face and neck in schools which have recently attracted so much attention, as well as the sudden occurrence in groups of eczema in families which have hitherto been free from eczema. The risk of infection does not therefore play a part worth considering either with regard to the question of the permissibility of a marriage or from the point of view of the married state. On the other hand it is possible for chronic cases of eczema, which cause severe itching and disturb thereby the general health in

¹Pathol. u. Ther. d. Eczems. Vienna 1903. A. Hölder.

²*Neisser*, l. c.

³*Unna*, l. c.

a perceptible manner, so to affect the working ability of the patient as to influence most injuriously the livelihood of the family. If we desire, further, to construct a relationship between eczema and married life, we might at the outside have to take into consideration the eczemas situated at the genital organs which are often very obstinate and, on account of the severe itching and the accompanying formation of rhagades, so painful as to cause a temporary disturbance of the sexual intercourse. Candidates for marriage must of course get rid of this troublesome affection first before they can think of getting married. In married women a frequent cause of this form of eczema is the fluor albus vaginæ which remains behind after the puerperal period. In many married women of the poorer classes who have to do unaided all the rough work connected with their households and the care of the children, and whose hands are therefore more or less constantly in water, the acute and sub-acute eczemas of the hands and arms from which they suffer may very well be regarded as occupational eczema. That the facial eruptions in children designated as milk-eczema depend always upon the nutrition is not admitted by most authors but ascribed to other causes.

14. *Pityriasis rubra (Hebra).*

The skin-disease described as *pityriasis rubra (Hebra)* which attacks as a rule the entire surface of the skin, covering it with an intense dark-red coloration, is in the majority of cases of a fatal character. In some cases it has been possible to ascertain simultaneous internal tuberculosis. (*Jadassohn.*) Though this severe disease, if it affects a candidate for marriage, precludes no doubt the entrance into an engagement to marry, it is nevertheless necessary for the physician to be somewhat careful with the prognosis, as in the first instance, the affection does get cured sometimes, though rarely, and secondly, the clinical picture cannot, at least in its early stages, be easily distinguished from the similar phenomena of the autotoxic erythemata (*Besnier*) or from dermatitis exfoliativa generalisata (*Wilson*,

Brocq), which are as a rule curable. The physician will therefore if consulted with respect to this affection from the standpoint of a contemplated marriage, do best to adopt at first a waiting attitude, and if the symptoms remain unabated for some time to declare categorically against the projected step.

15. *Impetigo contagiosa.*

Impetigo contagiosa, an easily removable affection, plays a part in the married state in so far only, as in virtue of the easy communicability of the disease from child to child, but not infrequently also from child to adult, the precautions requisite in the case of all external communicable diseases must be adopted here also.

16. *Erythema multiforme exsudativum.*

Erythema multiforme exsudativum in its different forms is not, on account of the almost constantly favourable prognosis, of especial interest from the points of view which concern us here. It can form a very troublesome complaint, recurring frequently and often at regular intervals, especially if the mucous membrane of the mouth is affected at the same time, when it is not always easy to distinguish it from pemphigus, but, as it is neither transmissible nor hereditary, it has no other importance with regard to the married state than any other disease taking an acute course.

17. *Erythema nodosum.*

The same thing applies to erythema nodosum which can constitute a marriage-obstacle or lead to a disturbance of the married life, only if accompanied by one of its rare complications, such as endocarditis, pericarditis or articular rheumatism.

18. *Impetigo herpetiformis* (Hebra).

It is sufficient just to mention this rare affection which occurred, in the majority of the cases observed, in connection with pregnancy and resulted after a short time in a fatal issue.

19. *Acne*.

Acne vulgaris, an affection occurring as a rule at an early age, and seldom lasting beyond it, might on account of its predilection for the face and on account of the scars which it occasionally leaves behind, form an objectionable element in a contemplated marriage for purely æsthetic reasons. As it is observed in female persons as a consequence of anæmic and chlorotic conditions, we not infrequently find aggravations during married life where a state of general debility is produced by pregnancy or uterine complaints. In the majority of the cases, though, the affection disappears in married persons of either sex, a circumstance probably due less to the regulated sexual relations of the married state than to the fact that in the middle of and beyond the twenties the disease vanishes altogether in most cases. That absolute chastity belongs to the etiological factors is, according to *Jarisch*, not difficult to refute by every-day observation.

20. *Ulcers*.

Among the forms of ulceration we have already briefly indicated the *ulcers of the leg* with their causal factors and consequential results. As they develop as a rule only later in life, and in women generally in connection with pregnancy and labour, they arise as a point requiring consideration in view of a projected marriage in rare exceptions only, and are then to be judged individually according to their prognosis.

It is, however, different in the case of those chronic forms

of ulceration of the vulva which are accompanied by an elephantastic thickening of all the soft parts of the vaginal opening and which must, because of their unfavourable prognosis as regards restitution, be considered also as marriage-obstacles.

What has just been said applies to the *perforating ulcer of the sole of the foot* in so far as it appears as a result or as an accompanying symptom of a cerebro-spinal complaint.

21. *Lupus erythematosus.*

In considering the relations between *lupus erythematosus* and the married state we can ignore almost entirely two rare forms of the same. In one of them, the *lupus erythematosus disseminatus* (C. Boeck), which distinguishes itself by the formation of nodules that begin subcutaneously and ulcerate later on, there is always present simultaneously tuberculosis of the glands or of the internal organs which is the prime consideration in the examination of the questions with which we are dealing here. The second form belonging to the same category—the *lupus erythematosus generalisatus exanthematicus* (Kaposi)—is an acute disease with, generally, a fatal result. Similarly, with regard to the rare combinations of *lupus erythematosus* and *lupus vulgaris*, we have only to recall the points which we mentioned when discussing *lupus vulgaris*. Where there is no tuberculosis, the prognosis of *lupus erythematosus* is nevertheless not very favourable. First of all, judging from statistics which have been published, a number of the persons affected are sure to be attacked afterwards by tuberculosis, and secondly, even if we regard the occasional concurrence of these two affections only as an accident—and this we do—the local character of the skin-disease also dictates as great a reserve as possible with respect to the consent to a contemplated marriage. Although in a number of patients the diseased centres heal up perfectly without giving rise, notwithstanding the superficial seat of the scars, to any particular cosmetic disfigurements, there are great difficulties in the way of the majority of the cases which prevent a definite cure.

Besides, even after complete cures, relapses occur frequently without there being owing to our ignorance of the cause of the disease any means at our command to avert the same. Especially unfavourable in this respect are the cases which are distinguished from the beginning by an extraordinary dissemination of the morbid centres over the whole body and which offer a great resistance to treatment. If, therefore, a patient suffering from lupus erythematosus addresses to the physician the question whether he may entertain the idea of marriage, the physician must in the first instance assume a negative attitude and recommend to the patient to get relieved of his disease first. If the symptoms are successfully removed it is still necessary to continue the observation for some time as is the case in many other diseases. Unfortunately, the number of those patients who get over this test-period satisfactorily is not great, although, as *Jarisch* says, "some cases—but not too many—of lupus erythematosus are capable of being cured permanently, either spontaneously, or by suitable treatment."

If the affection occurs in an individual already married, the relations of the married life, as long as there are no simultaneous tuberculous symptoms, will not be particularly disturbed; in fact, some patients continue for many years with their general condition and working-ability unimpaired. Where the disease is widely spread, and the mucous membranes do not escape, æsthetic objections may perhaps arise on the part of the healthy spouse and in this way bring trouble to the married life. Moreover, the multifarious dangers to which the patient is subject on account of the uncertainty of the prognosis are of an importance not to be under-estimated with regard to the continuance of a happy married life. There is no danger of the disease being transmitted.

22. *Folliculitis atrophicans.*

A smaller part is played, as being a purely local affection, by *folliculitis*, which is closely allied to lupus erythematosus, and leads to more or less circumscribed cutaneous atrophies.

There are formed in consequence hairless and bald patches, mostly on the scalp, which are of interest to the question of marriage and the married state from the cosmetic standpoint only.

23. *Hypotrichosis. Monilethrix.*

This may be said also with regard to the few cases of permanent hairlessness or diminished growth of hair which is generally of congenital origin. As the hereditary transmission of these anomalies occurs only occasionally and by no means regularly, the physician has no need to place any obstacles from the medical standpoint in the way of persons hereditarily predisposed in this direction who contemplate the contraction of a marriage.

What has been said applies equally to another arrested growth of the hairs, which always appears hereditarily—the *monilethrix* or *aplasia pilorum moniliformis*.

24. *Epidermolysis bullosa hereditaria.*

Among the bullous affections, the *epidermolysis bullosa hereditaria* claims our consideration first. It occurs frequently but not, as recent observations have shown, constantly, as an hereditary or family affection, and is characterised by a tendency on the part of the skin to respond with a formation of vesicles to external irritations. This affection cannot, as far as is known, be influenced therapeutically, and it disappears as a rule spontaneously during old age. In two cases a lasting cure was observed after the first pregnancy (*Bonaiuti, Colombini*). Its importance in the married state lies less in the possibility of hereditary transmission from one of the diseased parents to the offspring than in the constant discomfort and perturbations which the patients themselves experience. Such patients possess frequently only a very reduced working ability, as they are almost always subject to constant injuries either of the hands or of the feet, on account of the blisters which

they suffer from and which on bursting leave excoriations and occasionally ulcerations or even in some cases permanent changes, e. g. atrophies of the skin and deformities of the nails. And yet the general condition is always unimpaired. Conclusive with regard to the question of marriage is, in the case of an individual affected with this disease above all, his social position and mode of employment. The less dependent one is upon manual labour, the less intense will be the sufferings resulting from the constantly recurring formation of vesicles. In connection with an eventual contraction of marriage it will therefore be social rather than purely medical considerations which will require studying. Only in those very rare cases in which a constantly recurring hereditary transmission of this peculiar tendency of the skin has been observed through several generations, is it advisable for the physician to raise any objections against a contemplated marriage out of regard for the eventual progeny.

25. *Pemphigus*.

We can leave out of our discussion from the group of pemphigus-diseases the cases of *pemphigus acutus contagiosus infantum* and those of *dermatitis exfoliativa neonatorum* (Ritter), the first of which arises through infection, and takes generally a favourable course, whilst the second is of a malignant character and almost always fatal. They are children's diseases and as such of no particular interest to the subject of marriage.

As regards *pemphigus vulgaris* and its special forms, *pemphigus foliaceus* and *pemphigus vegetans*, there is always a necessity for the physician to declare against the contraction of a contemplated marriage, because of the extraordinarily unfavourable prognosis of the last-named diseases. In *pemphigus vulgaris* cures do occur occasionally but very rarely. It is, however, possible in such cases to speak of a real cure only, if a number of years have elapsed without there being a recurrence. Frequently the disease breaks out afresh after

many years of remission with the health perfectly unimpaired and ends then in spite of the early benignness fatally. The prognosis is most unfavourable if the disease commences at the mucous membranes or if it affects the same at an early stage. For this reason it is advisable that the physician should warn against marriage in most cases of pemphigus vulgaris. On married life the disease exercises no other effect than any other serious malady. Considering that the illness lasts as a rule for many years and that it occasions enormous expenses for attendance and nursing, pemphigus can seriously disturb not only the happiness of married life but also the pecuniary position even of people who are better off.

More favourable is the prognosis of the so-called *dermatitis herpetiformis* (Duhring). This disease which is interpreted in the sense of a neurosis *dermatitis neuritica* (Ittmann and Ledermann), offers *quoad vitam* a good prognosis, as the general health does not suffer in spite of the great subjective discomfort either during the periods of eruption or afterwards. The difficulty in estimating its importance from the point of view of a projected marriage lies rather in the differentiation of this certainly independent disease from the group of pemphigus-diseases with which it has occasionally some symptoms in common. Where the diagnosis of the affection is certain there can hardly arise any objections.

26. Sclerodermia.

For the estimation of *sclerodermia* as a marriage-obstacle the degree of the disease is on the whole conclusive. As a general principle we must take it for granted that no patient may marry as long as there are any signs at all of the disease present. But even after a cure has been effected it is also desirable to continue the observation for some time, since local relapses as well as sudden outbreaks in fresh places which were formerly healthy, are observed sometimes many years later.

The most favourable form is the *sclerodermia circumscripta* (*Morphæa*), which may heal either spontaneously or yield

to suitable treatment, frequently without leaving any symptoms. Occasionally atrophies which have remained behind may lead to disfigurements in the face and thus prove an obstacle to marriage. Married life is only exceptionally perturbed by the circumscribed form.

The prognosis is far more unfavourable in *sclerodactylia* and in the diffuse form of the disease which may be looked upon as objections against the contraction of marriage. The prolonged course of the disease which may last for many years, and the functional derangements caused by the atrophy and the flexures which may even become worse by the affection of the tendons, muscles and bones, and finally the slight prospect of cure justify the protest against the consummation of a marriage. The presence of the disease in a married individual must be judged like any other chronic ailment. *Sclerodactylia* which may exist for many years without endangering life is particularly apt to lead to the permanent loss of the use of both hands, thereby influencing most unfavourably the material position of a family whose bread-winner happens to be thus affected. *Scleroderma diffusa*, too, presents on account of the constant change of the various stages of the disease, remissions which render life for a time and sometimes for long periods endurable. It is even possible occasionally by the application of therapeutic measures to achieve a favourable result and to enable the patients to follow their employment for a long time. As a rule, however, the improvement is of a temporary character only; in some cases death ensues more quickly, and in others not before many years have elapsed during which the patients have suffered severely from local symptoms. The fatal issue is in these cases preceded by signs of disordered nutrition and marasmus, frequently complicated by diseases of the kidneys, of the lungs and of the heart. There is no risk of infection from husband to wife or vice-versâ.

27. *Atrophies of the Skin.*

Among the various diseases leading to cutaneous atrophies, in addition to those already named, *craurosis vulvæ*, an affec-

tion as to the etiology of which we are quite in the dark and which results in a shrinking of the vulva, deserves to be mentioned here briefly, because it frequently prevents cohabitation or obstructs labour by constricting the vaginal canal. Pregnancy and childbirth as such have no influence on the origin of the disease. In a number of cases a cure has been accomplished by an excision of the entire diseased region. The doctor's consent to the contraction of a marriage depends therefore entirely on the success of the treatment adopted.

28. *Neurodermias.*

Among the nervous diseases of the skin *urticaria* acquires an importance from the point of view of matrimony only if it arises as a consequence or accompaniment of an internal or constitutional affection (nephritis, hepatitis, diabetes). In such case the primary complaint is, of course, the decisive element in the situation. A predisposition to *urticaria* is often inherited. Particularly after the administration of the same drug one often sees *urticaria* occurring in several members of the same family.

Like *urticaria*, *pruritus essentialis* must be judged similarly from the point of view of the married state.

Prurigo (*Hebra*) which is etiologically allied to *urticaria*, and which causes trouble during childhood chiefly, can exceptionally make itself felt in its severe form only, in older people as well, and act disturbingly on married life, as the patients are apt in consequence of the constant itching and the sleeplessness to which it gives rise to become extremely nervous. It is principally the patients belonging to the poorer classes who have to suffer from this disease which is happily seldom very severe, because they are as a rule not in a position to take the hygienic measures necessary to make the condition endurable. In the case of such patients the peculiar constitution of the skin might occasionally on cosmetic grounds prove an obstacle to marriage.

Of the various forms of herpes, *herpes proenitalis* just

deserves to be mentioned in this connection because it frequently constitutes an obstacle of short duration to cohabitation, and also because in some cases it occurs in association with sexual intercourse.

Herpes zoster also can, if accidentally situated at the genitals, form a temporary local obstacle to cohabitation. Such cosmetic remnants as keloids and pigmented scars can only in exceptional cases constitute marriage-obstacles.

29. *Hyperidrosis manum et pedum.*

The offensive odour of the sweat of the feet or a moist clammy hand affected with hyperidrosis can sometimes be a disturbing element in connection with a projected matrimonial union. A permanent cure of these affections in so far as it does not occur spontaneously, can be achieved by our methods of treatment in very exceptional cases only. But occasional improvements of a strongly marked nature and even cures are observed, so that the annoyance to other people ceases to exist, and the chances of those candidates for marriage who suffer from the complaint undergo a material change for the better.

30. *Ichthyosis.*

Among the hyperkeratoses, *ichthyosis*, which as such is likely to prove a marriage-obstacle in extraordinarily severe cases only, acquires importance from the circumstance that in most cases a direct hereditary transmission from parents to children can with certainty be demonstrated. (*Lesser.*) *Thibierge* and *Fournier* also ascribe to marriage among consanguineous relations the origin of this complaint.

31. *Seborrhoea.*

The *seborrhœa* of the face and especially of the scalp which, if it lasts long and is not treated properly is often accompanied by loss of hair, offers so far as the contraction

of marriage is concerned hardly more than a cosmetic interest. Although the general opinion is in favour of the parasitic character of this affection, there is not much difficulty in avoiding the risk of infection, provided the husband and the wife use separate hair-brushes, etc. In many families the predisposition to the disease is transmitted from the parents to their descendants.

32. *Alopecia areata*.

Alopecia areata, of which the writer distinguishes two forms, a nervous one, frequently of traumatic origin, and a parasitic one, can generally be cured completely in a few months or perhaps only after some years. As the danger of infection in the parasitic form is only very slight if the necessary hygienic care is exercised, the disease possesses in its relation to marriage and the married state hardly more than an æsthetic importance. But in those very rare malignant and often incurable cases which are accompanied by a universal loss of hair on the head, face and other parts of the body, the patients may present such a repulsive appearance that as candidates for marriage they have absolutely no chance.

33. *Tumours*.

We may omit from our consideration in this place the relationship between tumours and the married state. The benign tumours can hardly claim more than a cosmetic interest as long as there is no disturbance of function. The importance of the malignant cutaneous growth among which we include also *mycosis fungoides*, the *leukæmic* and *sarroid* tumours as well as those associated with *acanthosis nigricans* and those which develop on the basis of *xeroderma pigmentosum*, is easily understood.

XVII

Diseases of the Organs of Locomotion in Relation to Marriage

XVII

DISEASES OF THE ORGANS OF LOCOMOTION IN RELATION TO MARRIAGE

By Professor A. Hoffa (Berlin)

The diseases of the skeletal system are principally in so far of importance with regard to marriage and the married state as they are capable of giving rise to changes in the pelvic bones, i. e., in the canal of parturition. Extensive deviations in the structure of the pelvis will form a complete obstacle to labour. Or the married state is indirectly influenced by osseous changes since extreme deformities of the thorax bring danger to the pregnant or parturient woman by force of the altered conditions of pressure or through injuries to the contents of the false and true pelvis.

Difficulty in cohabitation.—Coitus also may be rendered impossible or at any rate difficult, by severe changes in the bones, impossible for instance in extreme cases of osteomalacia where the narrowness of the pubic arch does not permit of an immissio penis. Under these circumstances the semen is deposited on the external genitals and conception can only take place if the spermatozoa reach the vaginal canal by means of their own motility. In cases of severe adduction- and flexion-contractures after coxitis and other diseases of the joints sexual intercourse in the normal way becomes difficult, if not altogether impossible.

Careful examination reveals a divergence in the pelvis of nearly every woman. May this difference be ever so slight, it is always in proportion to the general development of the individual, but so long as the pelvis still comes within the limits of normality it presents no obstacle to parturition. A pelvis is abnormal if the diameters are so narrow that a disturbance

in the pregnancy, the parturition or the puerperium must of necessity ensue. The term "contracted pelvis" is here generally applied. From the obstetric point of view, we must consider each pelvis as contracted which is in one of the principal diameters by at least $1\frac{1}{2}$ -2 cm. smaller than the normal. Prognostically speaking we distinguish 3 groups:

1) The absolutely contracted pelvis, whose shortest diameter does not exceed $6\frac{1}{2}$ cm. This does not under any circumstances permit of the normal birth of a mature living child.

2) The contracted pelvis, which, though permitting under favourable circumstances the birth of a living child, presents nevertheless a constant danger of unfortunate issue to both mother and child, and the probability of a difficult and protracted labour. The limits lie here between $6\frac{1}{2}$ cm. and 9 cm. in the conjugate.

3) The contracted pelvis, which, though not presenting a mechanical obstacle, yet is the means of forming an abnormal position of the child's head.

The contracted pelvis brings many dangers to mother and child and it is these dangers which claim our attention in this chapter.

Frequency of conception in contracted pelvis.

—About 20% of women have a contracted pelvis. As a rule they are less fertile than normal women, a circumstance which is principally due to the fact that a woman with pronounced osseous deformities does not readily find a husband and therefore has smaller opportunity for sexual intercourse. Severe injuries received in a previous difficult labour may also render further cohabitation and conception impossible.

The circumstance that such women give birth to more boys than girls is only indirectly a result of the pelvic anomaly but is rather due to the fact that they marry as a rule late in life.

Influence of the contracted pelvis in pregnancy.—This becomes apparent chiefly in the last months. The uterus in the severer forms situated high above the pelvic inlet because the narrow pelvis is no longer capable of holding the apex of the ovum which, under normal circumstances, is

directed downwards. The uterus acquires therefore too great a mobility, owing not only to the narrowness of the pelvis but also to the laxity of the abdominal walls and of the ligaments, as well as to a greater roominess in the abdomen. In some forms of pelvic changes there arise in the first months already, retroversion and afterwards retroflexion of the pregnant uterus. If the pregnant uterus is pushed backwards by the pressure of the abdominal organs it will not afterwards be able to pass in front of the projecting promontory of the sacrum.

Of frequent occurrence in contracted pelvis is the formation of the so-called pendulous abdomen, caused by the anteversion or ante-flexion of the gravid uterus. The uterus stands very high, is movable, and cannot on account of the severe curvature produced by the pregnancy find room any longer in the abdominal cavity, thus giving rise to an early relaxation of the abdominal walls which arch forward more and more. In some cases and above all in pelvis with too small an inclination, in which the abdominal space is seriously diminished by the short distance between the symphysis and the ensiform process or by a severe curvature of the spine, and also in those which on account of too great an inclination cause the anterior abdominal wall to be overburdened, the uterus sinks forward and produces still greater relaxation and looseness in the abdominal coverings. Severe curvatures of the spine, especially pronounced lumbar lordosis, are also capable of producing a pendulous abdomen. A further fairly frequent sequel is the change in the shape of the uterus: thus spherical, transverse-elliptical and crooked forms have been observed.

Position of child.—The position and attitude of the child are also influenced by this abnormality. Abnormal presentations of the fœtus are far more numerous, viz.: head presentations about 10% less frequent, than under normal conditions; prolapse of the funis and of the extremities 4 times as often and face, shoulder and breech presentations 2-3 times as often. The higher the degree of contraction the more frequent abnormal positions.

Influence of contracted pelvis on labour.—Parturition is often protracted where a narrow pelvis forms

an obstacle to labour, for a much greater strain is required to bring the process to a conclusion than is the case under normal conditions. The accompanying overexertion is calculated to endanger mother and child.

Labour pains.—A generally contracted pelvis very often coupled with imperfectly developed uterine musculature, causes a decline in the labour pains. The narrowed pelvic brim forces the head of the fœtus prematurely into the pelvic canal, but the latter being contracted arrests the progress and thus prohibits the natural movements of the ganglia situated in the antero-inferior uterine segment. If the head enters the pelvis, but its passage is blocked by the contraction of the succeeding pelvic planes, an excessive irritation of the ganglia ensues and the pains assume a pathologically severe character. The latter symptoms may, however, be due also to an overstimulated action of the abdominal muscles.

A further calamity is the premature rupture of the membranes, which still more delay the labour process since the head cannot, as under normal conditions, exercise a dilating influence upon the os uteri, the dilatation of the os remaining in abeyance until the head has overcome the obstacles.

Moreover, the head not filling the lower uterine segment properly, the whole of the liquor amnii escapes.

If the pelvic outlet is not contracted the labour is soon completed, once the head has entered the pelvis.

Prognosis of labour.—In moderate pelvic contractions the prognosis is more favourable for the mother than for the child; in the severer forms it is bad for both; in the absolute form doubtful for the mother, fatal without treatment (Cæsarian section), with treatment eventually favourable.

Injuries to the mother.—These consist chiefly of bruises to the soft parts if the head is wedged in between the promontory and the symphysis, degenerating into gangrene, fixation of the uterus in the region of Douglas's pouch, inflammation of the bladder or some forms of vesical fistulæ. Pressure on the roots of the sciatic plexus may also result, and, in very protracted labours, laceration of the utero-vaginal canal and rupture of the latter from the vagina; and all these may be

supervened by puerperal fever. At times one or more of the pelvic joints especially the symphysis pubis are torn away. In very much protracted labours there is danger of decomposition or the secretions from the genital canal filling the uterus with gas (tympania uteri). The uterine walls become greatly distended, the uterus rises as high up as the diaphragm, the labour pains dwindle or stop altogether and pyrexia ensues as a consequence of this infection.

Operations, too, frequently imperil the mother's life. Perforation *per se* is not dangerous, and version only slightly so, provided it is done aseptically and sufficiently early. But where the cervix is already dilated, there is always a risk of rupturing the uterus. The use of the forceps may do much harm where the head is high up. Breech presentations are more favourable for the mother. The soft breech can cause no bruises, and the after-coming head may be extracted so quickly as not to damage the soft parts either, since it is not the intensity but the prolongation of the pressure that causes the mischief. Nor are transverse presentations—if recognised early enough and treated promptly—very dangerous for the mother, though they may bring disastrous results with them if allowed to drag on unduly. A certain amount of association between contracted pelves and eclampsia cannot, in view of *Staudé's* researches, be denied, although these researches on the subject are not yet concluded.

Injuries to the child.—So far as the child is concerned, the almost unavoidable protraction of the labour alone is not without its dangers. If the labour pains remain strong after the rupture of the membranes and the escape of the liquor amnii, the blood is pressed out during the pains from the maternal blood-vessels not towards the placenta but towards the abdominal vessels of the mother. This exerts an unfavourable influence upon the quantity of oxygen in the fœtal blood, akin almost to asphyxia. The sex of the child, too, may play here an important rôle. Boys usually have a larger and firmer head and the birth of a male child occupies a longer period, thus involving a concomitant disturbance in the placental circulation. In addition, the pressure produced by the head is

apt to excite the vagus and thereby depress the pulse-rate with letal effect.

Owing to violent contractions, a detachment of the placenta may also take place. That prolapse of the funis or other small parts occurs comparatively often in contracted pelves, and that in the absence of proper and prompt skilled assistance the child's life may be jeopardised has already been pointed out.

While the head passes through the narrow genital canal, it adapts itself to the latter by the overlapping of the cranial bones, but rarely causing any injury.

Sometimes, though not often, we may witness a rupture of the sinuses underlying the cranial sutures, especially of the superior longitudinal sinus, provoking a fatal hæmorrhage into the cranial cavity. The pressure of the sacral promontory may flatten the fœtal bones lying next to it. This happens particularly to the posterior parietal bone in anterior parietal bone presentations, while the convexity on the opposite side is increased. At the same time fissures may arise, though these are of minor importance. On the soft parts of the head pressure-marks may be left behind through the pressure of the symphysis, and of the promontory, if the labour and, in consequence, the pressure were of long duration. A partial swelling of the head, an œdema of the eyelids may also be in the wake of the compression of the ophthalmic vein by means of the superior orbital fissure.

Circumscribed pressure-spots, leading even to necrosis, are found principally on those parts of the cranium which lie opposite to the promontory, commonly on the parietal or frontal bone situated posteriorly.

Of the severe injuries to the head, infractions and depressions easily head the list. The grooved-shaped depressions along the border of the parietal bone which is near to the coronal suture are of the most frequent occurrence.

More dangerous, however, are the spoon-shaped depressions on the frontal and parietal bones, i. e., deep indentations into the bone with one or more fissures at the periphery. The prognosis is not favourable (34% of deaths). In head pres-

entations, or when the after-coming head is violently extracted, a separation of the parietal and temporal bones may take place at the squamous suture, often proving fatal by virtue of the laceration and hæmorrhage of the sinus.

The prognosis is still more unfavourable when a separation of the epiphysis of the occipital bone occurs through the pressure on the occiput of the after-coming head—it may happen even in head-presentations. This proves always fatal as it causes either hæmorrhage into the cranial cavity or direct compression of the medulla oblongata.

The forceps may in difficult extractions cause a transverse fracture of the occiput at the place where the *suturæ mendosæ* subdivide the bone. Other severe destructions may be wrought in the course of difficult forceps-labours. Injuries to the extremities accompanying manual extraction and liberation of the arms, such as fractures of the clavicle and of the humerus or separation of the epiphysis are numerous. Paralysis of the upper extremities may follow the laceration of the brachial plexus. *Erb's* paralysis may also be produced in this way. At the neck, if extraction is made by the head, the mischief may consist of ruptures of fibres of the posteriorly situated sternocleido-mastoid muscle, which may lead to hæmatoma and subsequently to torticollis.

Prognosis of repeated labours.—As to repeated labours the prognosis is most favourable in the second parturition. The soft parts which at the first labour were as yet very rigid have, at least to a certain extent, been stretched by the former confinement, so that, the circumstances being alike, more favourable results may be anticipated. The situation is again unfavourable in subsequent labours. The fœtal head becomes larger and harder, the pains more and more weak, and the abdominal pressure ever more insufficient.

We have here given a rough sketch of the dangers that emanate from a narrow pelvis for both mother and child.

This is of course not the place to go into a detailed description of the pathology of the contracted pelvis. We take it for granted that the reader is familiar with it since it forms an integral part of all text-books on obstetrics.

What interests us here primarily are certain frequent diseases about the influence of which on the married state, medical practitioners are often called upon to express an opinion.

1. *Rickets.*

Influence of rickets on the pelvis of the child.

—Rickets, the primary cause of changes in the pelvis, attacks the child in its first or second year, when the infantile pelvis consists as yet of separate osseous portions attached to one another by cartilaginous substance. Under normal conditions this pelvis will readily support the superstructure of the body. In cases of rachitis running a mild course it also happens occasionally that no disturbance in the normal development of the pelvis takes place. Thus *Ahlfeld* (*Lehrbuch d. Geburtshilfe*, 1898) mentions cases in which rickets had demonstrably been present, but in which he could detect no changes in the pelvis. Nevertheless, it is possible for these eventual changes to be so slight that owing to the fallacies connected with pelvic measurements during life they may remain unrecognised. In severe rickets the development proceeds somewhat as follows: The osteoid layer situated between bone and cartilage remains unossified, and attains fairly large dimensions. On account of the soft intermediate tissue the firm attachment between cartilage and bone is loosened and thereupon yields more readily to the pressure and traction acting upon the pelvis. Moreover, the bone itself is thinner than the normal and therefore more liable to be affected by curvatures and inflections. When the rickets heals, the deviations from the normal pelvis persist, the same as the severe changes in the extremities and in the thorax. These deviations are produced by the dislocations of adjoining bones and partly also through compression of the osteoid structure at the epiphyses. If the child is not yet able to walk or has lost the ability to do so, the whole weight of the trunk rests during the sitting posture on the pelvis. The lateral counter pressure is eliminated and the pelvis is compressed from behind and above forwards and downwards.

The upper part of the sacrum is pushed downwards, the promontory sinks lower, the whole sacrum turns round its oblique axis, its lower part gets bent like a hook. The sacral vertebrae are pushed forwards and compressed from behind. The iliac fossae diverge anteriorly from one another, because the ilio-sacral ligaments exercise a stronger traction upon the posterior spines on account of the forward projection of the sacrum. This divergence of the iliac bones is still further increased by the greater pressure of the intestinal gases present in the distended abdomen of rachitic children.

In consequence of this the acetabula look forward and press during the attempts to walk against the anterior surface of the pelvis, so that its flatness is still more increased. The tuberosities of the ischial bones are forced laterally, the pubic arch is thereby enlarged and the symphysis assumes a more oblique position.

Rachitic flat pelvis.—The prognosis corresponds with that of the contracted pelvis.

Pseudo-osteomalacic pelvis.—In severe forms of rachitic pelvis there may be observed such a high degree of flatness that angular infractions actually occur on both sides. The more the base of the sacrum is pressed forwards and downwards, the more marked the flatness, the more the pelvis approaches the reniform shape. If, notwithstanding the very severe character of the disease, the child can walk, the acetabula are driven into the pelvis by the heads of the femora. Should the severe rachitis be also accompanied by an osteoporosis of the bone which is already firm, a form of pelvis develops which, on account of its resemblance to the malacosteon pelvis, is called pseudo-osteomalacic, or pseudo-malacosteon. The pelvic ring presents a shrunken appearance, the upper part of the sacrum is pushed deeply into the pelvis, the acetabular regions approach each other. Labour, under such circumstances, becomes absolutely impossible, and Cæsarian section remains the sole remedy.

Pelvis spinosa.—Frequently in rachitic pelves sharp edges and pointed prickles are formed especially in the anterior wall and sometimes also in the promontory.

The generally contracted flattened pelvis.—

Rarer than pelves contracted in the true conjugate only, are those which, besides being flattened in the antero-posterior diameter, are contracted in the other diameters as well, so-called generally contracted and generally contracted flattened pelves. The prognosis of labour is here very unfavourable for both mother and child, for the child particularly on account of the early rupture of the membranes, the long duration of the labour, and abundant malpositions. In the milder cases the forceps, or better still, artificial premature labour after the 30th week, might constitute suitable treatment, whereas in the extreme cases, with a conjugate below 8cm., we can only entertain preforation or Cæsarian section.

Generally speaking we may say that the narrower the conjugate in proportion to the oblique diameter, the more the conditions approach those of the flattened pelvis, and, if reversed, those of the uniformly and generally contracted pelvis.

The generally and uniformly contracted pelvis.—This is to be regarded only in the smaller number of cases as the resultant of rickets, while the major portion is due to chondrodystrophy and cretinism. On the other hand the generally contracted flattened pelvis is well-nigh always the product of rickets. As to the mode of origin, there are various opinions. *Olshausen-Veit* believe that in these cases a very severe form of rickets had made its appearance early, healing up again, however, soon with complete inter-ossification of the single bones. Other authors ascribe the origin to the growth-inhibiting influence of the disease on the bones on the one hand while on the other hand the sacrum is pressed forwards and downwards. Children with rickets often remain backward so far as size is concerned.

A generally and uniformly contracted pelvis,—contracted, if not in the anatomical sense of the oblique diameter, at least in an obstetrical sense—is also formed if in consequence of rickets the sacrum is moved so much forward that the promontory comes to lie in the oblique diameter.

Prognosis in generally and uniformly contracted pelvis.—The course of labour is here very much retarded, the head enters into the pelvis but slowly, and the passage through it is still more prolonged. The difficulties are not overcome with the entrance of the head into the pelvis but persist throughout the time of its presence therein. The strength of the pains also proves inadequate.

Gangrene and pressure-marks in the child are not so frequent as in cases of flattened pelvis; they are situated, when they do occur, mostly on the posterior frontal bone. The same applies to impressions of the bones. In the displacement of the bones the occiput is usually pressed underneath the parietal bones.

With a conjugate of 8-9 cm., it will be best—if the pregnant woman has come under observation soon enough—to institute artificial premature labour in the 34-36th week. With a conjugate under 8 cm. it is advisable to perform Cæsarian section soon after the commencement of the pains, provided the external surroundings are favourable.

Injurious sequelæ evolve during labour principally through more or less intensive bruises of the soft parts in the entire sphere of the pelvic ring, though this happens oftener in flattened pelvis. Vesical fistulæ do not form so easily, but circular contusions round the os uteri may frequently be observed.

Rachitic kyphosis.—A kyphosis supervening on rickets will alter the character of the rickety pelvis according to the time of life at which it sets in, if at the starting-point of the rickets, it changes the appearance of the pelvis so materially that but few of the characteristic signs of rickets are left behind. The sacrum is twisted round its oblique axis, so that the true conjugate is only slightly or not at all diminished, sometimes even increased, while the straight diameter of the pelvic outlet is shortened. The promontory is very high, and the vertebræ may at times protrude posteriorly. If the kyphosis sets in after the commencement of the rickets, the tubera ischii are so much drawn inwards that the sitting position still further contracts the pelvis. But if it supervenes at a later

stage, the tubera ischii are as a rule already rotated outwards, and this position they then retain.

2. Osteomalacia.

Osteomalacia—or mollities ossium—is properly speaking a puerperal disease, although many cases are reported by *Truzzi*,¹ *Hofmeier*,² *Preindlsberger*³ and others as having occurred in girls and men.

Osteomalacia consists of a softening of the osseous substance due to haliteresis or a dissolution of the lime-salts. This process begins at the periphery of the osseous trabeculae and progresses towards their centres. Whether a new formation of osteoid substance, that is, substance without lime-salts, takes place at the same time, as *Cohnheim* assumes, is, though not absolutely certain, yet very probable.

This morbid process in the bones is prone to bring about most acute changes in the skeleton. Thus in some of the worst cases the bones have been found to consist merely of membranous sacs filled with bone-marrow.

The starting-point varies with the form of the disease. In puerperal osteomalacia the first part attacked is almost invariably the pelvic bones; whilst in the non-puerperal form it is the vertebral column and the thorax, leaving the pelvis intact; but there are exceptions. As a rule the process runs a fairly similar course in both forms, now remaining stationary, or else spreading over every bone in the skeleton.

Etiology.—As for the etiology of osteomalacia our present knowledge is inadequate to form a definite opinion.

Besides the causes resident in the organism and controlling the affection, there are probably other external factors to be reckoned with, as is evidenced e. g. by the observation of the geographical distribution of the disease, and by other circumstances to which we shall presently recur.

¹Zentralblatt für Gynækol., 1890. Beilage 6, X. Internat. Congress.

²Zentralblatt für Gynækol., 1891.

³Wiener klin. Wochenschr., 1893. No. 21.

In speaking of the geographical distribution of osteomalacia we are confronted by the remarkable fact that, in Germany, for instance, the Oder district is almost free from the disease, whilst in the Rhine districts it is fairly prevalent. And the frequency of the cases varies again materially with different years. Even the animals living in the regions affected are not infrequently attacked by it.

To damp and unhealthy dwelling-places the cause of the disease is often ascribed. Attempts have also been made to hold malaria responsible for it, thus *Velits*¹ reports that in Hungary osteomalacia thrives where malaria and cretinism abound. A connection between osteomalacia and rickets has not been established. *Fehling*² sees the cause of osteomalacia in an increased activity of the ovaries. *Cohnheim* considers the malady as a disorder of nutrition, inasmuch as the maternal organism contains an insufficiency of calcium to satisfy the demand for lime-salts required by the fœtus and for the production of milk. *Fellner*,³ who has recently reported more than 40 cases of osteomalacia of his own observation, found in every one of his patients profuse menstruation lasting as a rule an undue time. He calls attention to the slight relapses in cases of pseudo-menstrual hæmorrhages after castration, and he sees further in a case of cure after a Porro-operation, published by *Schauta*, in which the ovaries were left behind, a proof of the close etiological connection between osteomalacia and menstruation.

The various acid-theories as well as the theories which look for the principal etiological factor in bacterial activity we can ignore, seeing how very little they rest upon unimpeachable investigation. We may well take it for granted that in all probability the etiology of osteomalacia is rather complicated. Multiparæ are most frequently attacked. *Fellner* found among his cases an average fertility of 6.5, *Fehling* one of 5.4, *Baumann* one of 6.8, *Rosentraeger* one of 8.2. In *Fellner's* cases

¹Zeitschr. f. Geb. u. Gyn., Vol. 23.

²*Verholgen*, d. Deutsch. Ges. f. Gyn., 1888, and Archiv f. Gyn., Vol. 39.

48. Zeitschr. f. Geb., Vol. 30.

³Bezieh. inner. Kr. z. Schwanger, etc., 1903.

osteomalacia made its first appearance 5 times in the second pregnancy, 6 times in the third, 8 times in the fourth, 4 times in the fifth, twice in the sixth, 3 times in the seventh, once in the eighth, and once in the ninth. The majority of the patients were between the ages of 30 and 35. The oldest woman known in literature to have been attacked by osteomalacia was 52, the youngest 13.

Symptoms.—The symptoms of osteomalacia can easily be described with the aid of *Fellner's* work just mentioned in view of the fact that it is based upon such abundant material.

Osteomalacia begins as a rule with "rheumatic" pains in the affected bones which at first are sure to be misunderstood. If the pelvis is attacked, as is always the case in the puerperal form, it becomes altered into the flat osteomalacic pelvis which passes more or less rapidly—according to the progress of the softening—into the well-known characteristic form in which it shows the typical triradiate shape. The promontory sinks and is finally situated far below the level of the pelvic inlet. The sacrum bends, so that the angle of the bend projects backwards. The pelvic inlet shows a typical reniform shape. The true conjugate as well as the transverse diameter undergo shortening at a fairly early stage. A lumbar kyphosis supervening sooner or later completes the aspect of the disease. According to *Fellner* the affection of the lumbar vertebræ generally runs parallel with that of the pelvis. The changes in the shape of the pelvic bones are produced by the same agents as other deformities due to superincumbent weight, namely the weight of the body, and muscular traction. But as a further element is added the burden imposed upon the pelvic ring by the growing uterus and its contents. The affection of the bones is further aggravated by a relaxation of the joints which may at the symphysis provoke the formation of genuine fissures.

Affection of the muscles.—The changes do not, however, affect merely the bones and joints, but they extend also to the muscular system, if only in a secondary manner, as some authorities hold, though others believe also in primary affections. These changes in the muscles consist of pareses, atrophies and contractures. *Latzko* and others have called

special attention to the contractures of the adductor and of the levator ani as early symptoms. *Fellner*, however, could not confirm them at the earlier stages of osteomalacia, though he could trace them at later periods. He found contractures in the adductor muscles whenever there was severe pain in the thighs. In one case there was atrophy of the deltoid muscle along with severe pain in the shoulder.

As regards the pains occurring in osteomalacia they commence as a rule in the thighs and at the lower part of the thorax, extending afterwards to the sternum and the upper ribs. Only in the most extreme cases are the upper extremities and the head also seized with pain.

Diagnosis.—Having now delineated the picture of osteomalacia which is decidedly characteristic of the culminating points of the diseased process, the question at once arises: How can we speedily arrive at a correct diagnosis? We have already pointed out that the "rheumatic" pains announcing the disease previous to the appearance of deformities, are as a rule misunderstood, almost as a matter of course. The very vagueness of the term "rheumatic pains," usually employed in such cases, serves as a proof. It will therefore be necessary in regions where osteomalacia is endemic at all, to think of this disease whenever pelvic pains are encountered in the course of a pregnancy. Careful observations will render an early diagnosis possible. *Schauta* points out that this can be achieved by comparing the difference that exists between the height of the body and the form of the pelvis.

Prognosis.—Regarding which we have already said that the disease may heal spontaneously, but that it is liable to recur in subsequent pregnancies, if it does not remain progressive at the termination of the present pregnancy. The prognosis will therefore always abide as a serious question. Should we be called upon to express an opinion on the intended marriage of a young girl who has already gone through the rare non-puerperal form of osteomalacia, it would be our duty to firmly oppose it, knowing the imminent danger of a relapse during an eventual pregnancy. For the puerperal form, of course, the only way open is to recommend therapeutic measures. It may

serve a good purpose to mention here the favourable results obtained by *Winkel* with phosphorus, and to emphasize the beneficial effects of castration (*Fehling*) in the treatment of osteomalacic processes.

Prognosis of labour.—Osteomalacia exercises an influence upon marriage and the married state in different ways. A malacosteon pelvis with its pronounced duck-bill shape may render coitus altogether impossible, as the narrowness of the pubic arch forestalls an immissio penis. In extreme cases the prognosis of labour was formerly considered decidedly bad, but to-day, owing to the more favourable prognosis of Cæsarian section, it is less doubtful for both mother and child. The pelvic bones are apt during labour to dilate and yield, like India-rubber, to the pressure of the head, thus facilitating an occasional attempt at version. The pliability of the bones can be readily determined under anæsthesia. Dilatibility has often been observed in pelvic presentations. If the pelvic bones cannot yield, Cæsarian section is the only alternative. But the osteomalacia must be taken in hand at the same time and the ovaries should be removed. The osteomalacia as such will then heal, but the alterations in the shape of the pelvis already existing will not be affected. As only the abnormal softness of the bones disappears, a favourable prognosis of an eventual parturition following the healing of the original osteomalacic process is still farther removed, for the pelvis has now been deprived of the power to further expand.

3. Lateral curvature of the spine. (*Scoliosis*.)

Heredity.—Lateral curvatures of the spine undoubtedly have a strong bearing on the married state in several directions. Primarily we have to consider, that inherited scoliosis is by no means rare. On the contrary, heredity is an important factor in its etiology. My statistics show an average of 27.5%. *Eulenburg* has found hereditary scoliosis in 25% among 1000 patients. It is not an unusual thing for scoliotic mothers to bring their scoliotic children for treatment or examination. The disease may be inherited from the father as

well. Often enough the disease lasts through several generations. I have seen in my own practice grandmother, mother and daughter affected with it.

Again the parents may be quite normal, but the disease is found in near relatives such as uncle or aunt. At times all the children of a scoliotic mother become equally scoliotic. Parents with kyphotic curvatures of the spine may bring forth children afflicted with or prone to scoliosis. The offspring are born with an hereditary laxity and weakness of the constituent parts of the spinal column, which easily degenerate into curvatures under the influence of secondary causes. Abnormal shapes of the vertebral column constitute in so far an inherited peculiarity, as deviations from the normal antero-posterior curvatures, especially the type of the flat dorsum, favour the formation of scoliosis.

Scoliosis and tuberculosis.—Secondly we must consider the relation of scoliosis to tuberculosis. *Freund* has called attention to the importance of abnormalities in the thorax in the pathogenesis of pulmonary phthisis; *Neiderl*¹ and *Bachmann*² have on the strength of post-mortem examinations maintained that scolioses of a medium degree predispose to tuberculosis; and still more recently *Mosse*³ and *Kaminer*⁴ have attempted by clinical investigations to establish the question of the frequency of tuberculosis in scoliosis. Contrary to the opinion of *Rokitansky* that apical affections and scoliosis exclude each other, *Mosse* found that scoliosis accompanies pulmonary tuberculosis very often. His observations establish that a simultaneous occurrence of scoliosis in the first and second degrees and of infiltration of the apex is not uncommon in children, and further that the seat of the scoliosis in so far influences the localisation of the tuberculosis, that in dorsal scolioses the apical infiltration is mostly situated on the convex side. *Mosse's* findings have recently been subjected by *Kaminer* to a careful scrutiny with the aid of a large mate-

¹Inaug.-Diss. München, 1886.

²Verand. der inneren Org. bei hochgrad. Scoliose u. Kyphoscoliose.

³Zeitschrift f. klin. Med. Vol. 41.

⁴Deutsche Aerztezeitung, 1902. No. 20.

rial (3700 women and 500 children). *Kaminer* found that of the scoliotic children only 23% showed a combination of scoliosis and apical infiltration; the other 77% were free from all affection of the apices. (*Mosse* had calculated in his cases 60.2% of scoliosis with apical infiltration.) Most of these children exhibited a scoliosis of the first degree. But no connection between the localisation of the apical infiltration and the convexity of the scoliosis could be ascertained by *Kaminer*. This percentage hardly warrants us to admit of a strong coincidence of scoliosis and apical affections, at least so far as children are concerned.

Different results, however, were obtained from the examination of the women. Here scoliosis was found to be accompanied by apical affections in 76.5% of the cases; and of these again 52.5% presented apical affections on both sides. But no special law governing the localisation of the pulmonary affections could be established. Yet, since *Kaminer* also recognised a connection between scoliosis and tuberculosis, existing at any rate in adult women, *Mosse's* norm may be deemed here applicable.

On the whole I agree with *Kaminer*. My own observations made on thousands of children affected with scoliosis, lead me to the conclusion that pulmonary tuberculosis is an exceedingly rare occurrence in young scoliotic individuals. At any rate, I am of the opinion that scoliosis in itself does not form a predisposition to pulmonary tuberculosis. In examining a large number of scoliotics it is but natural to find among them some tuberculous patients; and, seeing how prevalent tuberculosis is, we can hardly be surprised at that. The comparatively large percentage of *Kaminer* may possibly be due to the fact that he examined mostly patients who were under treatment at a polyclinic for diseases of the chest. I am in a position to follow up the history of my scoliotic patients for many years back, and cannot remember a single case of death from pulmonary tuberculosis.

There is no necessity for prohibiting a marriage on account of a possible danger of pulmonary tuberculosis supervening in a scoliotic patient.

Scoliosis and labour.—Thirdly, we must duly weigh the influence of scoliosis upon labour. Medical practitioners are often confronted by the question whether a scoliotic girl should be permitted to marry. This question springs, as a rule, from the apprehension that the deformity in the spinal column may produce an injurious effect upon the pelvis and subsequently upon the course of an eventual parturition. The answer should be, generally speaking, in the affirmative, although I have seen a large number of my scoliotic patients (even with scoliosis of the third degree) marry and give birth to healthy children who grew up quite straight. For all that, each case should be judged on its merits and particular attention should be paid to the general state of nutrition of the patient, and to the seat of the scoliosis as well as to the nature and degree of the curvature.

Form of pelvis in scoliosis.—I will first describe the changes which the female pelvis undergoes through the development of a scoliotic curvature of the spine. The shape of the pelvis in scoliosis varies, according to the age at which the scoliosis has been acquired. Where the affection has made its appearance at a very early age, i. e., principally in rachitic scoliosis, the asymmetry of the pelvis is often very pronounced, thus constituting the true type of the typical rachitic pelvis.

In the scoliosis which develops at a later age—generally between the 8th and 12th year—in the ordinary habitual scoliosis with right convex dorsal scoliosis and left convex lumbar scoliosis, the sacrum participates, as a rule, in the compensatory lumbar scoliosis. In consequence the pelvis shows an oblique inclination and the left side is weighted more than the right. The ala of the sacrum situated on the side of the concavity, and the neighbouring parts of the innominate bone lying between the ala and the acetabulum become compressed, are narrower than on the opposite side, and the sacral foramina grow smaller. At the same time the sacrum undergoes a rotation. The iliac bone is in its posterior part deeper, since it participates in the depression of the ala of the sacrum, and is displaced upwards, backwards and inwards. The linea terminalis is bent at an angle between the ileo-sacral joint and the

acetabulum and thence runs straight forwards. In severe displacements of the ileum backwards and upwards it runs forwards without such a bend. This displacement of the ileum is the result of the greater acetabular pressure on the side of the lumbar scoliosis which narrows the sacrum and forces the acetabulum inwards and upwards.

The iliac fossa is, through ligamentous traction, placed rather steeply and therefore frontally on the side opposite to the lumbar scoliosis. The tuber ischii of the scoliotic side is turned outwards and forwards by force of the traction of the rotatory muscles of the femur which is dislocated upwards and backwards and not infrequently also curved. The pubic arch is displaced towards the side opposite to the lumbar scoliosis. On the whole the pelvis shows in consequence of the conditions just described an oblique oval form with severe flattening. The oblique diameter on the side of the lumbar scoliosis is the longest. The lower the scoliotic curvature is situated in the lumbar portion of the spine, the more pronounced is the change in the pelvis. If on the other hand the scoliosis is situated high up and the compensatory curvature of the lumbar portion is completed above the sacrum the form of the pelvis remains intact.

If in addition to the lateral curvature of the spinal column there is also present a curvature in its antero-posterior diameter, the malformation is called kyphoscoliosis.

4. *Kyphoscoliosis.*

Shape of pelvis in Kyphoscoliosis.—The most frequent form of kyphoscoliosis is the lumbo-dorsal at the transition from the dorsal to the lumbar vertebral column. The humpback is situated mostly backward and to the left. The shape of the pelvis is in these cases brought about by the static laws acting uniformly in scoliosis and kyphosis. Just as the rachitic character of a pelvis is almost entirely eliminated by kyphosis supervening on rickets, so there is very little left of rickets in a pelvis in which kyphoscoliosis has supervened.

on rickets. The sacrum is twisted round its frontal axis, with its base directed backwards and upwards, and the apex forwards. The promontory stands comparatively high. The sacrum is narrow, almost straight, but shows the convex projection of the vertebræ in front of the wings. One half of the sacrum, namely the one which is on the side opposite to that of the kyphoscoliosis, is in the ordinary cases of lumbodorsal kyphoscoliosis, which are compensated by a scoliosis and lordosis of the lower lumbar vertebral column towards the opposite side, compressed and narrower; the sacral foramina are rounder and lower. Through the overpressure weighing upon it in the scoliosis of the lumbar segment the respective half of the pelvis is rotated upwards and inwards and receives a smaller inclination than the other half. The lateral bones are twisted round their sagittal axis, so that they diverge widely at the top, while the ischial bones approach each other. The pubic arch is forced towards the opposite side, the tuber ischii is, like in the scoliotic pelvis drawn outwards or inwards. The true conjugate is, as compared with the scoliotic pelvis comparatively longer, sometimes even absolutely longer, than in the normal pelvis. The antero-posterior diameter of the pelvic outlet is diminished, and the shape of the pelvis on the whole resembles somewhat that of a funnel.

Differential diagnosis between scoliosis and kyphoscoliosis.—The difference between the kyphoscoliotic and the purely scoliotic pelvis consists in this that in pure scoliosis there is a more marked lordosis of the lumbar vertebral column, whereas in kyphoscoliosis there generally develops only a weak scolio-lordosis. The latter pulls the base of the sacrum towards it. In the highest degrees of kyphoscoliosis the sacrum may be drawn by the lower segment of the vertebral column backwards and towards the latter. The wing of the sacrum and the sacral foramina of that side being thus compressed, the body-weight nevertheless rests on the opposite half. In very high degrees of kyphoscoliosis in which the head and that part of the trunk lying above the kyphoscoliosis fall over to one side, they are supported by the rotated pelvic half corresponding to the kyphoscoliosis. At the same time

there ensues a curvature and compression of the pelvic half synonymous with the kyphoscoliosis. If the seat of the kyphoscoliosis is so high up that compensation is already established above the pelvic brim, it is only the kyphosis as such which exerts in that case any influence upon the pelvis.

Diagnosis.—The diagnosis of a scoliotic and kyphoscoliotic pelvis can generally be made by an examination of the whole vertebral column. To determine the degree of the contortion, the distance of the transverse processes between the spinous process and the anterior middle of the body of the vertebræ should be ascertained. Even a slight deviation of the spinous processes will indicate the presence of a serious fault in the bodies of the vertebræ, and also a considerable curvature of the respective pelvic half. *Leopold*¹ recommends for the determination of the degree of kyphoscoliosis the construction of two lines: The first a posterior perpendicular line with the determination of the distance of the protuberance from it in sagittal and frontal directions, and the second a horizontal line through the spinous process of the uppermost sacral vertebræ, projecting upon it the point of the protuberance. With the help of these two lines it is possible to determine the extent of the sagittal and lateral deviation; the greater this deviation, the greater on the other hand the asymmetry of the pelvis.

Such are the pelvic changes due to scoliosis or kyphoscoliosis. Whilst it is true that scoliotic mothers often give birth to healthy children without much trouble, yet, most serious complications for both mother and child must be looked for where pelvic alterations are encountered.

General disturbances in curvature of the spine.—Pregnancy may become the source of grave danger if the spinal curvature is very pronounced, if the woman is anæmic, and particularly if the curvature is accompanied—and this frequently happens—by the disturbances of a displaced heart. The compression of the lungs and the obstruction to the pulmonary circulation often generate in such

¹Das scol. u. kyphoscol. Becken. Leipzig, 1890. D. Arch. f. Gyn. Vol. XVI.

patients dyspnœa and irregular cardiac action. The labour process also may usher in most alarming symptoms, for the dyspnœa is capable of assuming extreme proportions, and a fatal issue may suddenly supervene as the result of cardiac insufficiency and pulmonary œdema.

These serious symptoms demand the earliest attention and often indicate the necessity of instituting artificial premature labour.

At parturition it is wise to accelerate the labour process on account of the inactivity of the normal abdominal pressure, for in the absence of the latter a sudden convulsive action of the respiratory and abdominal muscles may cause paralysis of the heart. Cardiac stimulants, such as tea, brandy, camphor, etc., should in such cases be always kept at hand.

However, the labour may, as already stated, take, in lighter forms of curvature, a perfectly normal course.

Aggravation of scoliosis during pregnancy and the puerperium.—A few words must be said about the evil influence exercised by pregnancy upon a scoliosis, whereby the whole skeletal system is sometimes weakened and its resisting power lessened. Pregnancy is always apt to aggravate scoliotic conditions. I have frequently had occasion to satisfy myself on this point. It is expedient under these circumstances—and the task is not always an easy one—to construct a supporting apparatus for the spinal column capable of being adjusted to the gradually increasing circumference of the body. Most cases of aggravated scoliosis occur, however, during the puerperium, and especially in women who continue lactation for a long time. During the puerperal period the skeleton exhibits a decided tendency to lose its bearing power. There need not necessarily supervene a genuine osteomalacia. Perhaps nothing more than an abnormal yielding propensity on the part of the skeleton may result from an increased elimination of calcium salts. Nevertheless this progressive softening and yielding of the bones is calculated to aggravate the scoliosis. I have seen this repeatedly. It is not always noticeable immediately after labour, but some months later, when the patient is already getting about.

Women who previously were not troubled much with their scoliosis begin to complain of neuralgic pains as it were, produced by a more pronounced overlapping of the ribs and a consequent pressure on the intercostal nerves. If consulted about scoliosis during pregnancy I invariably give the advice to have a proper supporting apparatus made for the back for use immediately after confinement. This apparatus can be constructed so as not to interfere at all with the act of lactation. It acts prophylactically and often saves the patient trouble.

Prognosis of labour.—As regards the prognosis of labour, we may say that parturition takes place in non-rachitic scoliosis, as a rule, spontaneously and easily; in rachitic scoliosis it may also occur spontaneously, though in the severer forms of the disease artificial assistance is very often called for. It is best to proceed expectantly, and if it becomes imperative to accelerate the labour-act, forceps may be tried first. Should the attempt prove unsuccessful, or if the child is dead, craniotomy must be resorted to. If the head has not descended into the pelvis and the os is fully dilated, version is indicated, provided the obstruction is of a moderate degree. If the after-coming head cannot otherwise be extricated, craniotomy must be performed. In extreme cases of curvature, Cæsarian section is the only method of procedure, since symphysiotomy does not offer any prospect of success. On the whole, pelvic presentations are here also more favourable for the mother than head presentations, as on account of the shorter duration of the labour severe bruises from the pressure of the head are excluded. On the other hand pelvic positions are more unfavourable for the child since the extraction of the head generally endures for some time.

5. *Spondylitis.*

Influence of spondylitis on the pelvis.—In kyphosis produced by caries of the vertebræ, the pelvis undergoes various changes, which are governed by the spondylitic

kyphosis being situated low down and the vertebræ, affected by it, forming part of the configuration of the pelvis, or by the sacrum participating more or less in the compensatory lordosis of a gibbus situated in the upper part of the vertebral column. If the seat of the gibbus be in the upper dorsal portion, the pelvis remains unimpaired. If the disease is located farther down, i. e., in the lower dorsal portion of the spine or in the lumbar region, the centre of gravity of the body is thrown so much to the fore, that, in order to maintain an upright posture, the trunk must needs lean further back. In this way the physiological lordosis becomes more accentuated, and the pelvic inclination is reduced; the lower portion of the vertebral column is pushed backwards, the sacrum rotates round its frontal axis, the promontory recedes, the apex of the sacrum is tilted forwards, the innominate bones diverge at the top, whilst their lower portions approximate.

If situated very low down, i. e., in the lower lumbar or the upper sacral vertebræ, the upper part of the gibbus falls like a roof over the pelvic brim.

Influence on pregnancy.—In the case of spondylitis the first point to ascertain is, whether it has healed or not. In a tuberculous disease of the vertebræ not yet healed up, pregnancy would, like in all other tuberculous affections, eventually lead to untoward consequences. If, however, the spondylitis has healed up and the contraction of the pelvis is inconsiderable, there is no ground for objecting to marriage. Through the narrowing of the abdominal space in pregnancy a pendulous abdomen is frequently formed. This as well as the contracted form of the abdominal space must be held accountable for the oft-occurring occipito-posterior positions at labour. Similarly in low-seated gibbus the upper part which hangs, so to speak, roof-like over the pelvic inlet, occasions retroversion and retroflexion of the uterus. To this reference has already been made when discussing the general prognosis of contracted pelvis.

Prognosis.—The prognosis of labour depends upon the eventual contraction of the pelvic outlet. In high-seated kyphosis the inlet of the pelvis is widened, without material diminu-

tion of the outlet. In strongly marked pelvic contraction the prognosis is unfavourable for both mother and child unless Cæsarian section is performed.

In severe cases Cæsarian section has hitherto been recorded 25 times, and symphysiotomy 4 times. Where the oblique diameter is diminished to below 6 cm. only the former can claim consideration. In very low situated lumbo-sacral or sacral spondylitis the so-called pelvis obtecta is formed. It presents the same prognostical conditions as the spondylitic pelvis.

6. *Spondylolisthesis.*

Etiology.—The spondylolisthetic pelvis is caused by the dislocation of the 5th lumbar vertebra. Proportionately with the degree of dislocation, a narrowing of the pelvis ensues in the antero-posterior diameter. As a guide for this contraction we cannot, as under ordinary circumstances, utilise the true conjugate, but rather a line of junction from the most projecting 3d or 4th lumbar vertebra to the symphysis. According to the more recent researches of *Neugebauer*¹ the spondylolisthesis does not consist of a peculiar sliding or luxation of the vertebra, but in a lengthening of the interarticular portion.

The vertebræ develop from three osseous centres, i. e., from an anterior centre for the body, roots of the arch and the superior articular process from a posterior centre for the inferior articular process, and from a middle centre for the transverse process and the costal process. Where the fusion takes place between the anterior and the posterior osseous nuclei, the interarticular portion is afterwards situated. If this fusion fails, the preliminary causation of the spondylolisthesis is created, i. e., the so-called spondylolisthesis interarticularis. Instead of the bony union a pseudarthrosis or syndesmosis exists. Through gradual or sudden forcing, this articulation is stretched or torn, and the spondylolisthesis is thus produced. In most cases of this rather rare form of disease of the bones,

¹Zur Entwicklungsgesch. d. spondylol. Beckens, etc. Dorpat 1882. D. Spondylol. et spondylizème. Paris, 1892.

the stretching of the syndesmosis happens after repeated pregnancies, as the ligaments whose resisting power is already impaired, become softer and more relaxed during pregnancy and ever more extensive by force of the steadily increasing weight. But instead of this gradual, there may also arise a sudden formation as the consequence of an injury.

Diagnosis.—This can readily be made from the appearance of the patient alone. The trunk and particularly the lumbar portion of it, is shortened; the thorax is sunk into the false pelvis; there is a marked lumbar lordosis—the base of the sacrum lies free—great width about the hips and widely diverging posterior-superior spines of the iliac bones are noticeable; the pelvic inclination is gone. In mild cases the disease may be mistaken for lumbo-sacral spondylitis. In the first instance, however, the history and above all the dislocation of the 5th lumbar vertebra will prove decisive; in the latter, the more marked S-shaped curvature of the iliac bone. Furthermore, the posterior borders of the iliac bones form a more acute angle than in spondylitis; and again, a spondylitic gibbus remains unaltered with a change in position, whilst the bend in spondylolisthesis flattens when the body inclines forwards or is in the knee-elbow position.

Prognosis.—The prognosis may be considered unfavourable if the narrowness is of a high degree, in fact worse than in a rachitic pelvis with the same conjugate. The narrowness in the spondylolisthetic pelvis begins already in the false pelvis with the lordotic curvature of the spine, and does not stop at the narrowest point, but continues along the pelvic cavity. Moreover the pelvic outlet is also contracted.

With a conjugata pseudovera (from the most projecting lumbar vertebra to the symphysis) of more than 9 cm. a normal labour may still be expected. With a conjugate between 8 and 9 cm. the labour cannot take place without vigorous assistance. If the conjugate is between 7 and 8 cm. long, it is best to induce artificial premature labour between the 32d and 36th week; if below $7\frac{1}{2}$ cm. perforation or Cæsarian section is indicated; whilst with a conjugate of less than 6 cm. Cæsarian section only is feasible.

Heridity.—In speaking of congenital dislocations of the hip-joint from the standpoint of marriage and pregnancy, we must in the first instance consider the possibility of an hereditary transmission which in this particular disease is certainly very great. Congenital luxations frequently repeat in the same family. The expression “dislocation-families” seems almost justified. I take occasion to quote here a statistical table by *Narrath*.¹ Out of 100 cases of which *Narath* could obtain full particulars, not less than 40 children could show at least one second case among the relatives. Either the father or the mother was affected with a luxation, or the abnormality was present among the blood-relations of the father or of the mother, and sometimes of both parents. The luxation may be inherited just as easily by the male as by the female line. It is even possible to establish regular genealogical trees of such “luxation-families.” I reproduce here one such observation by *Narath*.

Great-great-grandfather.
free (?)

Great-grandfather
free

Brother
free

(Grandmother) × Grandfather
free

1) Aunt 2) Father 3) Aunt 4) Uncle 5) Uncle 6) Aunt 7) Aunt 8) free
free free free

(Mother)
free

♀ ♂ ♀ ♀
All free

♀
L. cox. unilat.

♂ ♂ ♂ ♂ ♂ ♂ ♀ ♀
All free

1) Sister 2) Brother 3) Sister 4) Brother 5) Brother 6) Brother 7) Patient
free free Lux. cox. sin. Lux. cox. bil. Lux. cox. bil. free Lux. cox. bil.

¹Beitr. z. Ther. d. Lux. coxæ cong. Vienna and Leipzig, 1903.

There remains yet to be added that the mother of the patient had normal hip-joints, as was also the case with her many blood-relations who numbered about 100 people, and who happened to be all assembled once upon some family occasion. It also is worthy of notice that the woman marked with X is married to a man of the same family, consanguinously related in the 3d and 4th degree with the grandfather.

The dislocation may, however, occur also where the parents are perfectly healthy. It may be present in all the offspring or in alternate cases or at irregular intervals. Some otherwise healthy parents have only children with luxations. It is absolutely impossible in any given case to predict whether a mother with a dislocation will bring forth similarly afflicted or normal children. Many of my patients with dislocation, some even with double dislocation, have married and given birth to perfectly normal children, so that I should never refuse my consent to a marriage because of a possible hereditary transmission. Besides, congenital dislocation of the hip is at the present day a complaint which is open to complete cure in by far the larger majority of cases, and therefore need no longer be dreaded.

Possible disturbances at parturition are, generally speaking, no ground for withholding the consent to a marriage in one-sided or even in double-sided dislocations of the hip. The history of the dislocated pelvis in relation to its influence upon childbirth is interesting. *Dupuytren* concluded from his observations that the dislocated pelvis is perfectly suitable for pregnancy and labour. Later authors some of whom have contributed most valuable communications on the subject, such as *Sedillot*, *Vrolik*, sen., *Rokitansky*,¹ *Ditzmann*,² *Gurlt*,³ *Hubert*,⁴ *Lenoir*,⁵ *Fabrizi*,⁶ pay also but little attention to the obstetrical

¹Handbuch der patholog. Anatomie.

²Schrägoales Becken, etc., bei einseit. Coxalgie 1853.

³Ueber einige Missgestaltungen d. menschl. Beckens 1854.

⁴Mécanisme du développement du bassin, etc. Brüssel 1856.

⁵Déformation du bassin, etc. 1850-60.

⁶Das schrag-ovale Becken mit besonderer Berücksichtigung seiner Entstehung im Gefolge einseitiger Coxitis. Kiel 1853.

problem connected with the matter. They are satisfied that a dislocated pelvis does not as a rule cause trouble at parturition.

The first to collect material of his own on this point, and to call attention to the complications which may arise during labour, was *Guéniot*.¹

We shall return to the experiences of this author later on. For the present we will consider briefly the changes that take place in the pelvis in consequence of dislocation of the hip-joint.

Pelvis in one-sided dislocation.—In one-sided or simple dislocation we observe that the pelvis has assumed an asymmetrical form; the diseased side is entirely atrophied. *Guérin* says that the affected side has undergone a laceration, namely from before backwards, from below upwards, and from inside outwards. The iliac bone shows a steeper position, while the ischium has experienced a rotation outwards.

Pelvis in double dislocation.—In double luxation the pelvis though somewhat symmetrical shows atrophy, and the deformities described in one-sided dislocation are present in both hips; there is a steeper position of both iliac fossæ. The pelvic inlet is somewhat diminished in either diameter. The sacrum has a pronounced forward curve. A lengthening of the horizontal pubic rami has taken place; the pubic arch is flattened. The tubera ischii are markedly rotated outwards, so that the oblique diameter of the pelvic outlet is extended, while the direct diameter is diminished. Further, a conspicuous slenderness of the bones is caused by the atrophy; and an abnormal inclination of the pelvis in its totality is produced by the abnormally strong curvature of the lumbar vertebral column.

Guéniot observed that a large number of dislocated pelvis contained bony ridges and sharp edges at the anterior border of the entrance into the true pelvis; he also mentions cases in which great difficulties arose at the labour in consequence of these ridges. To these we shall return later.

¹Des Luxations coxo-fémorales soit congénitales soit spontanées au point de vue des accouchements. Paris 1869.

In addition to these pelvic changes we must also consider the adducted position of the femora associated with double dislocation of the hip.

If we take a general survey of the influence of dislocation of the hip on pregnancy and labour, we may point out that in the great majority of cases the labour undoubtedly takes place at the normal period without difficulty.

Influence on the pregnancy.—But deviations from the normal course of pregnancy and labour do occur, and are by no means rare; for we find that not infrequently an oblique position of the uterus and a pendulous abdomen develop as the result of the great inclination of the pelvis. Thus *Fen* records a case in which the abdomen of the patient when she walked, touched the ground. The swaying of the patients, in very pronounced cases may also have a damaging influence upon the course of the pregnancy. In consequence of this waddling gait, the pregnant woman may lose her balance, and suffer contusions of the abdomen and uterus; it may even bring about premature expulsion of the fœtus and serious injuries to mother and child. The complications observed now and then in pregnant women with dislocation of the hips, such as hæmorrhages, vomiting, etc., need not necessarily be ascribed to the dislocation.

Prognosis of labour.—In considering the labour itself, we find that owing to the abnormal pelvic inclination with severe lumbar lordosis in double dislocation, owing to the lateral inclination of the pelvis with lumbar scoliosis in one-sided dislocation and also owing to the asymmetry of the two pelvic halves, abnormal positions of the fœtus may ensue capable of causing difficulties at parturition. As a rule the labour runs a normal course, and it would even appear that in some of these cases the confinements are particularly easy and rapid. Should there be malposition of the fœtus, artificial help will occasionally be called for, but on the whole interference is certainly not oftener indicated in dislocated pelvis than under normal circumstances.

From what has been said, nobody will ever think of prohibiting the marriage of a woman with typical dislocation of

the hips, but an eventual pregnancy will have to be watched with care, knowing what trouble lies in store for mother or child. It is wise to recommend such pregnant women, especially if they manifest a very pronounced waddling gait, to abstain from walking about too much and thus prevent the possibility of traumatic injury to the uterus and fœtus.

Position of adduction of the femora.—Finally, a few words are due to the position of adduction of the lower extremities in double dislocation of the hip. This position of adduction is frequently so intense that the legs are almost crossed and anything like a sufficient abduction is rendered impossible. In this condition coitus in the normal manner is excluded. Such patients must not be allowed to marry until a proper separation of the thighs has been facilitated by tenotomy of the shortened adductors. I have by this means enabled quite a number of patients to get married. Also in women with double dislocation of the hip who have already borne children, tenotomy of the adductors may yet be performed to advantage. I operated thus successfully upon a lady who had been normally confined of three children. After the third accouchement the position of adduction of both legs increased to such an extent that the patient could no longer fulfil her conjugal duties. I reduced this position of adduction by operation with the result that she has since given birth without any trouble to 5 more healthy children.

8. *Morbus coxae.*

Form of pelvis.—The coxalgic pelvis resembles that in unilateral congenital dislocation of the hip. It is generally an obliquely contracted pelvis with more or less markedly pronounced flattening of the linea arcuata and an accompanying contraction of the pelvis on the healthy side, and is due to the overweighting of the healthy leg. It is the more pronounced, the earlier morbus coxae sets in. As far as the labour is concerned another element besides the contracted pelvis claims our attention, viz.: a further material increase in the

contraction resulting from the flexed contracture of the diseased joint.

The question whether patients who have had morbus coxæ ought to be permitted to marry is decidedly of practical importance.

Consent to marriage.—Marriage is beyond doubt permissible if the morbus coxæ was of a non-tuberculous nature. Of course it may be taken for granted that active diseases of the hip will hardly ever come before us in connection with the subject of marriage, but rather processes which have run their course for some time and which have left behind more or less extensive contracture or ankylosis of the formerly affected hip-joint. Now should the coxitis have arisen on a rheumatic basis or upon the basis of an osteomyelitis, and if the joint has healed with a middle position, there can be no reason why the marriage should be interdicted, even if the joint is ankylosed. Moreover, even in cases of a healed tuberculous morbus coxæ marriage may be allowed if the disease is not associated with a concomitant tuberculosis of the internal organs, a condition present in about 23% of all cases. If, however, internal tuberculosis is also diagnosed, such general recommendations must be adopted as are laid down in the chapter of this book dealing with the subject of tuberculosis. (See article by *Kaminer*.) With reference to the healed circumscribed tuberculous coxitis we must weigh here mainly two points, first the coxalgic pelvis already described above, and secondly, the more or less pronounced flexed and adducted contracture of the diseased leg, which as a rule is present.

Prognosis.—The coxalgic pelvis presents with regard to labour about the same chances as the scoliotic pelvis. The prognosis depends more on the roominess than the obliquity of the pelvis. I know quite a number of women who, notwithstanding a coxalgic pelvis of a pronounced type and in spite of by no means inconsiderable contracture at the hip with the leg in flexion and adduction, have given birth without much difficulty to one or more healthy children. In other cases, again, artificial assistance becomes at times necessary, just the same as in cases of a normal pelvis.

A coxalgic pelvis does therefore not necessarily justify a prohibition of marriage. That which makes the parents as a rule shrink from giving their consent, is the false position of the leg. In point of fact, normal coitus becomes impracticable where the one leg is markedly in a position of adduction—a condition generally present when the *morbus coxæ* has run its course. However, those patients who marry, know how to help themselves. I have been told by them or by their husbands that they practise sexual intercourse in the lateral position. The labour also takes place in the lateral position.¹ Other patients burdened in addition to adducted contracture with a strong flexed contracture of the legs and consequently an increased pelvic inclination, accomplish coitus in the abdominal position, because, on account of the greater inclination of the pelvis, the introitus vaginae is situated much further back. Coitus thus exercised, though abnormal, yet achieves its purpose and the patients do not suffer very much from an ensuing pregnancy, for, if the ankylosis in the hip-joint is moderately firm, the leg—the shortness of which can easily be corrected by a high boot—gives a sufficiently strong support to the body.

Marriage may therefore be permitted under these circumstances, but we should never forget that it is quite within easy reach to render normal intercourse possible by correcting the contracture of the leg through a simple sub-trochanteric osteotomy performed before the consummation of the marriage. All that is necessary afterwards is to keep the leg properly in a sufficient state of adduction, to correct any subsequent flexion and along with it the increased pelvic inclination. With the latter correction the introitus vaginae will naturally return to its normal situation. I cannot forget how grateful a patient of this description was to me when, having been afflicted with coxitis from a very early age, she could for the first time in

Translator's note: That the author refers here to delivery in the lateral position as something unusual is due to the circumstance that the dorsal is on the continent of Europe the usual position at labour. I believe also that in America the dorsal position is more generally adopted.

her life after the operation touch her "sex," as she expresses herself, from the front.

That patients with such deformities are particularly prone to perverse gratification of the sexual desire, does not agree with my experience; on the contrary they take a special pride in being able to prove to their husbands that in spite of their deformity they are yet capable of performing their duty and of becoming happy mothers.

Form of pelvis and prognosis in other diseases which exclude permanently or for a long time the use of one leg.—Here we may say that, as regards the form of the pelvis and parturition, conditions, similar to those in morbus coxæ prevail also where patients have not had the use of one leg either permanently or at any rate for some time owing to an affection of the knee-joint, or to infantile paralysis, or to the amputation of an extremity. The one-sided pressure of the healthy thigh will gradually bring about a narrowing of the unimpaired half of the pelvis, without, however, affecting the normal course of labour.

But inflammation and ankylosis of both hips lead to the formation of an ankylotic-oblique, contracted pelvis, unfit for normal labour. Cæsarian section is the only alternative even where the child has already succumbed.

9. Tumours of the bones.

Division.—Under this heading belong those tumours which attack the pelvic bones, such as exostosis, enchondroma, fibroma, and sarcoma, the most frequent of which is exostosis. A well-known form is the so-called "prickly pelvis" (pelvis spinosa) due to an ossification of the tendons, ligaments and fascial attachments. The tendons of the psoas minor and the origin of the iliac fascia are particularly liable to become ossified causing a bony ridge to project into the pelvic cavity at the junction of the pubis with the iliac bones.

Notwithstanding these exostoses being in themselves but benign formations they are yet capable of giving rise to unpleasant and even insurmountable disturbances in the labour proc-

ess. *Bessel-Hagen*¹ rightly insists that all women and girls who in any way exhibit outward signs of exostosis should be subjected to a thorough examination of the pelvis.

While fibromata are but seldom observed in the pelvic bones, there is a plentiful crop of enchondromata and osteosarcomata. The latter generally originate on the posterior pelvic wall. The osteosarcomata offer a very bad prognosis, as they may interfere with and obstruct the labour from purely mechanical causes.

In the presence of pelvic tumours our attention will therefore be directed, first to the nature of the tumour, and secondly to the mechanical deterioration of the pelvic cavity.

Prognosis.—Where the malignancy of a new growth is established, marriage must be denied. In the case of a mere mechanical obstruction the question arises whether a surgical removal of the obstructing tumour lies within the range of possibilities. Otherwise our decision must be governed by the degree of contraction. In other words, we must ascertain whether the obstruction is so small that the prospects of a labour at the normal end of pregnancy are favourable. If not, the only remedy at hand is to have recourse to the armamentarium of obstetrical operations.

10. Fractures.

Here we are engaged with fractures of the pelvis only. On account of the great firmness of the pelvic ring, those of the pelvis form only a very small proportion of the fractures in general. Statistics also show that it is principally men who are subject to this injury. It is therefore not likely that the medical man would be often consulted with regard to an eventual marriage of persons thus injured.

Of course we are now concerned solely with reduced fractures. We know through *Drexler* that more than half the number of pelvic fractures heal up, though generally with some displacement. It is the degree of the latter which must guide

¹Handbuch d. prakt. Chirurgie. Vol. II.

our judgment as to whether the pelvis is suitable for the happy accomplishment of a pregnancy. Severe dislocations arising principally from fractures of the pelvic ring, are capable of leading to most serious difficulties. In recent years legislation has enacted stricter regulations bearing on the after-effects of accidental injuries, and the question of compensation to female victims on account of an impairment of their propagative faculty is already engaging the attention of serious minds. Thus *Kaufmann*¹ reports the case of a girl, 19 years old, who had received in a railway accident a severe fracture of the pelvic ring which left a permanent obstruction to labour. In view of that physical inability she obtained a substantial yearly allowance.

Considerable dislocations or extensive masses of callus projecting into the pelvic cavity naturally form an absolute impediment to marriage and pregnancy. A careful external and internal examination aided eventually by Roentgen-radiography will establish an exact diagnosis and facilitate an opinion on the prognosis of possible pregnancies.

11. Developmental anomalies of the pelvis.

The generally contracted pelvis.—Of the anomalies of the parturient canal due to developmental disturbances, the generally contracted pelvis consequent upon an excessive smallness of the skeleton as a whole represents the mildest form. Prognostically speaking it has the same significance as the generally contracted pelvis.

Infantile pelvis.—If the original process ran on normal lines, but the development of the child during and after the foetal period—though at first proceeding regularly—has come to a standstill, the so-called “infantile pelvis” is formed. The sacrum lies backwards between the two innominate bones, the promontory is high and projects but little, the pelvic inlet appears round or elongated. But not only an arrest of or a disturbance in its development, but also rickets, may be the

¹Handbuch der Unfallsverletzungen.

cause of a generally contracted pelvis. (See *Senator's* article.) The same alteration in the form of the pelvis may be due to chondro-dystrophy as well. So far as the prognosis is concerned they are all of the same value.

The masculine pelvis.—In contrast to the infantile is the masculine pelvis, by the Germans called "Assimilations-becken." Owing to an abnormal disposition the fifth lumbar or the first coccygeal vertebra comes to form part of the sacrum, thus bringing up the promontory very high. The pelvis in consequence assumes a funnel-shaped appearance which gives it a resemblance to the male pelvis.

The dwarf-pelvis.—In the dwarf-pelvis an arrest of the development of the bones has taken place at an early stage, showing in consequence a severe diminution in all the diameters. The conjugate may be reduced to 6 cm. or even to less. The prognosis naturally will be influenced by this latter factor.

The funnel-shaped pelvis.—It possesses all the qualities of the generally and uniformly contracted pelvis and those of the dwarf-pelvis combined, and is further distinguished by a considerable length of the sacrum and by a great height of the lateral pelvic walls. It is equally an anomaly of predisposition or growth.

In the milder forms the prognosis is favourable, but in the severer cases apprehensive for both mother and child. The continuous pressure of the head easily provokes gangrene of the pelvic soft parts and gives rise to many evils, such as fistulæ, caries of the pubic rami, etc. In almost all the severer cases artificial interference is necessary. If serious complications arose in previous confinements, artificial premature labour should be instituted at an early period.

Very little is known as to the origin of the simple flat pelvis, but prognostically it must be classed with the rachitic flat pelvis.

Separation of symphysis.—In congenital split symphysis the innominate bones diverge widely from one another, the sacrum is pressed in deeply between them, but labour is not very materially interfered with.

12. Chronic articular and muscular rheumatism.

Though there is apparently but little connection between chronic articular and muscular rheumatism and the subject of marriage, it does happen occasionally that a chronic articular rheumatism acquired in early years so impairs the free movement of the extremities that marriage must remain out of the question. I remember a case of chronic ankylosed inflammation of the spinal column in which I thought it expedient to withhold my consent to marriage. In addition to the rigidity of the spinal column there was an almost purely diaphragmatic form of respiration, in which the chest took hardly any part so that in the event of pregnancy the life of the girl would surely have been jeopardised. Heredity also, no doubt, is a potent factor in primary progressive chronic articular rheumatism. Generally speaking it is an exception if both parents and offspring are attacked by this disease; but it does happen. *Charcot* and *Trastour* have traced heredity in 2%, *Bannatyne* in 5%, *Garrod* in 12.8% of chronic non-gouty articular rheumatism. *Pribram* found among 57 cases 3 such similar affections in parents and children. Genuine gout is frequently classed among the congenital maladies. *Garrod* regards gout as hereditary in 43% of his cases. Nevertheless, the medical man will hardly ever think of prohibiting the marriage of a gouty patient, since gout is rather looked upon as a "healthy disease."

XVIII

Diseases of the Eyes in Relation to Marriage, with especial Regard to Heredity

XVIII

DISEASES OF THE EYES IN RELATION TO MARRIAGE, WITH ESPECIAL REGARD TO HEREDITY

By G. Abelsdorff, M.D. (Berlin)

The relations between conditions of ill-health and the married state as regards the eye may exhibit various manifestations. It is, of course, possible for husband or wife if suffering from a contagious eye-disease, to infect the other, should the laws of hygienic cleanliness be disregarded, for instance, where they both use the same washing-utensils. In addition to this occasional possibility, which is the natural outcome of the closely intimate relations of married life, pregnancy and child-birth play an important part. The retinitis albuminurica gravidarum may endanger vision to such an extent that in some cases the retinitis alone must form, in order that blindness may be averted, an indication for the artificial interruption of pregnancy, a proceeding which we know from experience often influences favourably the affection of the retina. Similarly, where the eye-sight has already suffered, it is necessary to take cognisance of the great inclination of the retinitis gravidarum to recur with repeated pregnancies, and to grant a limited justification to the adoption of measures calculated to prevent conception in individual cases.

Excessive loss of blood during the labour process may endanger the visual organ. Hæmorrhage in miscarriages also is apt to cause disturbances of vision, which may pass away but which may also terminate with atrophy of the optic nerve.

During the puerperium and lactation there occurs, apart from metastatic ophthalmia and septic retinitis accompanying puerperal fever, a primary optic neuritis with, as a rule, favour-

able termination necessitating, nevertheless, the weaning of the child.

The eyes of the child are also liable to be endangered by the labour process, either through infection or injury. The secretions from the maternal genitals which come in contact with the eyelids of the child may, when the latter opens its eyes, enter the conjunctival sac and infect it with micro-organisms. Of these micro-organisms the most dangerous is the gonococcus, because the gonorrhœal inflammation of the eyes of newly-born children (blephorrhœa neonatorum) may, if not treated soon and energetically, lead to the destruction of the cornea. It is a lamentable fact that at least 10% of the blind have lost their eye-sight in this way. Successful results are obtained not only by proper treatment with nitrate and other preparations of silver, but also by the prophylactic measures recommended by *Credé*, viz.: introduction of a drop of a 2% solution of nitrate of silver into the eyeball immediately after the birth of the child and the cleansing of its eyes (but not with water from the bath!). The eyes must, of course, be guarded afterwards as well to prevent mischief through contact with an infectious lochial discharge.

Not every inflammation of the eyes in newly-born infants is necessarily of a gonorrhœal nature; proofs are accumulating that pneumococci and streptococci also play a part as exciting agents; but in the inflammations produced by these bacteria the cornea is not affected.

Injuries in the labour-process, which must naturally occur oftener where forceps or other artificial assistance is employed, are liable to involve the eyelids, the eyeball, its muscles and nerves. Comparatively often retinal hæmorrhages are seen in the eyes of newly-born children, even after spontaneous labours. These, though they may be completely re-absorbed, supply a possible material explanation of weak sight at a later period of life notwithstanding an apparently normal condition of the eyes (amblyopia congenita).

In addition to these injurious influences operative at the time of parturition, the most important factors in the causation of eye-diseases will be found in the morbid elements already

existing previously to the birth of the child and transmitted by heredity from the parents to their offspring.

Hereditary diseases of the eye.

Under this heading we shall consider only those diseases which are hereditary in the strict sense of the word, that is those which may be traced back to a condition existing at the moment of impregnation i. e. to the constitution of the sperm-cell or ovum-cell as the carrier of hereditary qualities. It is, however, not always possible, as for instance where such affections are limited to one or two members of a large family, to dismiss the suspicion altogether that external influences may have had some effect upon the developing embryo, and that the disease is after all an acquired fœtal affection.

We will not concern ourselves here with those general or organic diseases which rest upon an hereditary basis and which attack occasionally the eyes as well (syphilis, gout, diabetes mellitus, etc.). We will rather consider the question to what extent the probability of having inherited a disease which is limited exclusively to the eyes, acts in favour or against the contraction of marriage. Everybody understands more or less the importance of unimpaired eye-sight for earning a livelihood and for enjoying one's life; fortunately, however, the number of hereditary eye-diseases likely to lead to incurable blindness is so small, that in view of the proverbial blindness of love very few people, indeed, will be deterred from venturing upon matrimony because of a fear that their children might be affected with a weakness of the eye-sight. Though other considerations preponderate, as a rule, in the formation of a decision, it is, nevertheless, possible for the physician to exert his beneficial power in a negative sense by allaying unfounded fears, by explaining in some cases what to the lay mind will appear paradoxical, viz.: that it is not the diseased but the healthy person belonging to a predisposed family that harbours the predisposition to hereditary transmission (for instance in hereditary affection of the optic nerve). He can

improve matters greatly by inducing individuals hereditarily affected, to devote particular attention to the hygiene of the eyes, and so on.

Beyond this practical importance, the hereditary diseases of the eye possess a high theoretical value which more than justifies their special consideration in this place. *Darwin*¹ was in my opinion right when, notwithstanding his wonderful intimate acquaintance with all the other details, he confined himself to the one organ, the eye and its accessory parts, whilst discussing the inherited human diseases. The ordinary difficulties which one meets in practice so far as disease in general is concerned, do not exist in the affections of the eye, for the simultaneous occurrence of rare eye-diseases in several members of a family enables us to eliminate almost entirely the element of accident. A second circumstance facilitating an opinion is that the majority of hereditary eye-diseases are localised in certain definite parts of the organ (lens, retina, etc.). The interpretation of incontrovertible observations places therefore a particularly reliable material of facts at our disposal for the study of hereditary diseases and the manner of their transmission. An example will be found in the atavistic type observed in various affections of the eyes, as f. i. night-blindness, colour-blindness, affections of the optic nerve and nystagmus, in which the continuity of the generations is interrupted, like in hæmophilia, so that the malady of the grandfather appears in the son and in the male grandchildren, missing the daughters but attacking the sons.

So as to remain within the limits of the object sketched out for this work, I omit here a detailed description of the diseases in question and confine myself to a general survey of the hereditary diseases of the eye, only in so far as they relate to the subject in view. To save the reader a detailed reference to the numerous cases known in literature, I will simply mention a few pregnant examples. (A very comprehensive selection of the literature on the subject will be found in *Groenouw*: "Beziehungen der Allgemeinleiden und Organer-

¹*Darwin*. The Variations of Animals and Plants in Domestication.

krankungen zu Veraenderungen und Krankheiten des Sehorgans; *Graefe-Saemisch*, Handbuch der ges. Augenheilkunde. New edition.)

I. Colour, form and refraction of the eye.

A fact known even to the layman is that the colour of the eye, in other words, the consistence and quantity of the pigment in the iris, is hereditary to such an extent that it establishes a racial characteristic. Albinos, whose irises show a reddish translucence by virtue of the absence of pigment, form an exception as they do not generally transmit direct to their descendants this pigmentlessness which is accompanied by photophobia and usually also by diminished acuteness of vision; in their case the abnormality shows its nature as a family affection only by being present in several brothers or sisters.

The shape of the eye no less than its colour is influenced by heredity and refraction in its turn depends upon the form of the eye. In a recently published communication *Hertel*¹ informs us upon the strength of a material—which, though limited in numbers, is an excellent one for the reason that the children as well as their parents (father or mother) were examined—that the refraction of the children corresponded with that of their parents:

In hypermetropia in 69%,
In myopia in 65.7%,
In emmetropia in 48%.

The amount of the material found in literature is too meagre to enable us to allow of definite deductions as to the hereditary character of pronounced astigmatism, though it is theoretically speaking by far the easiest to deal with; in myopia the circumstances are reversed. Notwithstanding the large number of available statistics the question is very difficult to decide because of the frequency of myopia. Myopia is not

¹Ueber Myopie, v. *Gräfe's Arch. f. Ophth.* 56, 2, p. 326. 1903.

congenital, on the contrary almost all newly-born children are hypermetropic; it can therefore be only a question of inherited predisposition. But in spite of the want of unanimity of opinion on the origin of myopia there is a general consensus with regard to the favouring influence of close work upon its development. It is therefore quite possible that the same external injuries, such as close work, have produced myopia both in the parents and in the children. Notwithstanding this possibility it cannot be denied even after a critical examination of the material, that heredity constitutes a co-operating factor; the observations made by *Schmidt Rimpler*¹ on a large number of school-children do not admit of any other interpretation. He established that the higher the degree of myopia, the higher also the percentage of those whose parents were likewise myopic; for instance in myopia of 1.0-6.0 dioptries the heredity amounted to 48.3%, in myopia of more than 6 Ds. to 64.8%. *Stilling* and *Laqueur* are inclined in cases of severe myopia to attribute a considerable rôle to consanguinity as well. At all events, the children of myopic parents are far more inclined to become myopic under the injurious influence of intensive close work, than are the children of emmetropic or hypermetropic parents. In their case particularly those hygienic measures should be carried out scrupulously which reduce to a minimum the injuries caused by such close work as is unavoidable (good light, sufficient intervals of rest, etc.).

Apart from these changes in the form of the eye, which affect more or less the whole of the eye-ball, there are quite a number of hereditary diseases of the eye which attack only a definite circumscribed portion of the organ or its tissues.

II. Cornea.

There is observed at times in eye-balls otherwise normally constituted, a congenital opaqueness of both corneæ, either

¹Zur Frage der Schulmyopie. v. *Gräfe's Arch. f. Ophth.* 35, 4, 1889, p. 276.

total or partial, which may, however, clear up again, more or less, in the course of time. It is not a condition which can be described as hereditary in the strict sense of the word, but it comes into evidence simultaneously as the result of a fœtal inflammation in several children of the same family, although no lesion can be detected in the parents.

III. Iris.

The iris may be absent to a greater or less extent (aniridia congenita, irideremia). This defect is present as a rule in both eyes. Apart from the striking appearance of the persons thus affected and the disturbance in the vision arising from the glare, there are frequently also other complications, for instance, weak sight, nystagmus, opacity of the lens, etc. The influence of heredity is in this anomaly particularly marked. Daughters as well as sons are liable to inherit the disease either from the father or from the mother. A very characteristic observation by *Guthier* (communicated by *Beger*, *Zeitschr. für Ophthalmol.* Vol. 5, 1837) on the absence of the iris in 10 cases among 4 generations may serve as an illustration.

Of 8 brothers one had irideremia, of the 8 children of the latter 3 boys presented the same defect. The oldest of the sons had 4 boys of whom 3 manifested complete and one partial irideremia. The children of the latter had normal eyes. Of the other 3 brothers of the third generation the second brother also had a daughter without any iris, and a healthy son. The third brother also had a daughter with the same anomaly.

It is not always easy to differentiate sharply between partial absence of the iris and coloboma; for which reason family-histories are known in literature in which some of the members had irideremia and others coloboma of the iris. Not infrequently the coloboma of the iris is associated with a coloboma of the choroid; and even if the eye-sight is not much disturbed, such eyes in which the cleft extends to the posterior portion, are inclined to chronic inflammatory conditions.

Heredity shows itself sometimes in this way that several brothers and sisters, or parents and children, are equally affected with abnormal clefts. Though heredity does not play here such an important part as in irideremia it is, nevertheless, remarkable that *E. v. Hippel*¹ has succeeded recently in demonstrating the influence of heredity on the formation of colobomata in rabbits. He was able by mating normal female animals with a male rabbit affected with a typical coloboma below the entrance of the optic nerve, to produce a brood of which 18% had colobomata.¹

IV. Crystalline lens.

In the two large groups into which the diseases of the lens may be classified, viz.: changes of position and opacities, hereditary forms have been established.

Ectopia lentis.—Congenital malposition which always produces disordered vision, and occasionally attacks of glaucoma, may pass through several generations without distinction of sex. *Becker*² records f. i. cases of ectopia of the lens in a brother, a sister and the children of the latter, a boy and a girl.

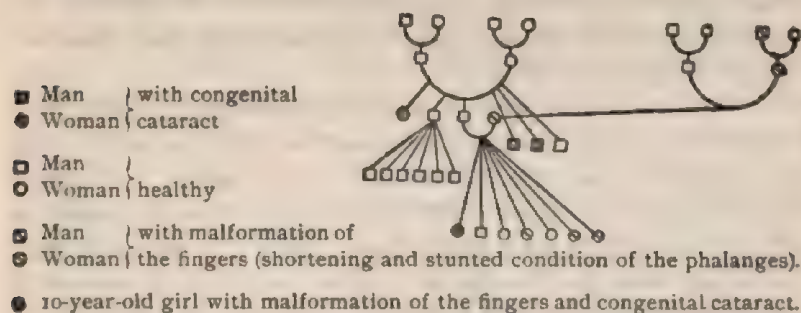
Cataract.—Every variation in the structure of the lens produces, by virtue of the latter being a transparent body, an opacity (cataract) which is either congenital or acquired. Both kinds can be hereditary, although heredity does not often come into question as an etiological factor. Every opacity of the lens is, moreover, either primary or secondary. In regard to the primary we do not as yet know of any cause lying outside the lens, though later investigation may succeed in proving it to be a secondary cataract, while secondary cataracts emanate either from diseases of other parts of the eye (for instance, choroiditis, retinitis pigmentosa) or from diseases

¹Embryol. Untersuch. über die Entstehungsweise der typischen angeb. Spaltbildungen (Coloboma d. Augapfels. v. *Gräfe's Arch. f. Ophth.* 55, 3, p. 597. 1903.

²*Gräfe-Saemisch*, Handb. d. gesammten Augenheilk. Vol. 5, p. 267.

of a general character (for instance, diabetes mellitus). The secondary cataracts do not require consideration in this place because, in so far as they are connected with other hereditary eye-diseases, they are treated along with the latter (retinitis pigmentosa), whilst the cataracts produced by hereditary constitutional diseases only, form an occasional complication of the general state of impaired health.

The hereditary formation of cataract affects nearly always both eyes. In the congenital kind it is possible for the ascendants to have been quite healthy. Thus *Purtscher*¹ reports on congenital gray cataract as a family-affection; healthy parents with good eyes had 11 children of whom the 4th, 7th and 11th were blind from cataract. On the other hand a healthy father or mother can transmit to the offspring indirectly congenital cataract occurring in their respective families. The following genealogical tree communicated by *Appenzeller*² will serve as an illustration.



Here a predisposition to cataract in the father's family and one to the digital deformity in the mother's family were transmitted to the child notwithstanding the absence of consanguinity.

The lamellar cataract which is congenital or acquired in early childhood, can also be transmitted directly from gen-

¹Angeborener grauer Star als Familienübel. *Zentralbl. f. prakt. Augenheilk.* 1897, p. 198.

²Ein Beitrag zur Lehre von der Erbllichkeit des grauen Stars. *Inaug.-Dissert.* Tübingen, 1884, p. 21.

eration to generation. The writer has seen lamellar cataract in mother and daughter (*Hirschberg*¹), in grandmother, mother, son and daughter of the latter.

According to *Laqueur*² "the direct transmission of congenital cataract from parents or grandparents respectively can generally be demonstrated by the fact that the father or the mother suffered from juvenile cataract—i. e. cataract developing at an age between 25 and 35,—that they also turned grey as a rule at an early age, and that the children were born with cataract."

Not all the observations on this point can be credited with supplying sufficient proof that heredity has a direct influence upon opacities of the lens which develop only in the course of life. The so-called senile cataract is, comparatively speaking, of such frequent occurrence that the conclusiveness of many an observation is very doubtful; take for instance that of *Becker*³ who operated for cataract on a woman 50 years old, who, when convalescent, received visits from her mother and her nonagenarian grandmother, both of whom had also been operated upon for cataract.

On the other hand, such cases, where several healthy members of a family developed cataract in youth or middle age, are capable of one explanation only. As a matter of fact such cases do exist. I quote from *Hirschberg*:⁴ "Of the 4 children of a man who became blind from cataract in his 30th year, 3 became equally blind from cataract at the early age of 28. They are otherwise all healthy and strong, and all have been successfully operated upon. The only child of the youngest daughter showed congenital lamellar cataract in both eyes."

Father and mother can transmit the disease to their male as well as to their female descendants, though isolated members of the same generation as a rule escape.

¹Ueber Schichtstar bei älteren Menschen. *Centralbl. f. prakt. Augenheilk.* 1893, p. 225.

²Ueber hereditäre Erkrankung d. Auges. *Zeitschr. f. prakt. Ärzte.* P. 728, 1897.

³*Gräfe-Saemisch's Handb. d. ges. Augenheilk.* Vol. V., p. 202.

⁴*Deutsche Zeitschr. f. prakt. Heilkunde.* 1874, p. 31.

V. Choroid.

The congenital fissures (colobomata) have already been mentioned. Hereditary inflammations, excepting syphilis, are exceedingly rare, if they occur at all.

I only know two instances in which a suspicion of hereditary etiology was justified. One¹ relates to two healthy brothers who were attacked in middle life with double symmetrical choroiditis. The other one, communicated by *Bull*, refers to a father, son and daughter (out of five children) who suffered from choroiditis without any demonstrable cause. (Quoted after *Magers*.)

VI. Retina.

Retinitis pigmentosa.—This degeneration of the retina proceeding from the periphery to the centre and accompanied by secondary atrophy of the optic nerve, attacks both eyes and is congenital, or begins in early childhood. It leads by a chronic course, after a duration of years or decades, to blindness. Hereditary conditions play here an important part. In about 50% of the cases hereditary predisposition can be demonstrated. A direct transmission from parents to children is rare, and runs, as a rule, through two generations only, though it is not possible to exclude with certainty further transmissions.

This is shown by the following case treated by the author: Grandmother and mother of the patient were afflicted with night-blindness from early childhood. The grandmother became blind at 56, the mother at 44. The patient, aged 24, and a younger sister, aged 19, presented a typical picture of retinitis pigmentosa, whilst a brother is said to have good eye-sight. Of the patient's three children, one boy sees well, a daughter 6 months old could not be examined, and a daughter

¹ *Magers*. Ueber hereditäre Sehnervenatrophie und hereditäre Chorioiditis. Inaug.-Dissert. Jena, 1899.

4 years old showed already changes of the pigment-epithelium in the form of numerous white spots in the periphery of the fundus of the eye.

More frequently we come across collateral heredity, so that several brothers and sisters—but as a rule not all of them—are attacked. As to the order of succession in which they are affected, no absolute type is applicable to the generality of cases. The male sex supplies, however, the larger percentage.

The affection of the retina can be complicated with idiocy, deafness, deaf-mutism, polydactylism. Occasionally these complications appear in the same family alternately with atrophy of the retina; and just as these diseases and malformations occur in connection with consanguineous marriages, so we see $\frac{1}{4}$ to $\frac{1}{3}$ of the persons suffering from retinitis pigmentosa, descending from parents who are consanguineously related in various degrees. But as the percentage of consanguineous marriages is much lower than 25%-30%, it necessarily follows that there must be some connection between the occurrence of retinitis pigmentosa and the consanguinity of the parents.

Glioma of retina.—The glioma which proceeds from the retina and which, if the eye is not enucleated soon enough, leads to a fatal issue through the formation of metastases, is a disease of childhood. In some cases its origin dates from the fœtal period. The congenital predisposition becomes evident from the fact that occasionally several or even all the children of healthy parents are attacked by glioma of the retina. *Newton* recently reported the case of a large family in which 12 out of 16 children were affected with glioma of the retina. (The original communication: Glioma of the retina, Australasian Medical Gazette, Aug. 20, 1902, not being accessible, I am obliged to quote this from the review in the Archiv f. Augenheilkunde, Vol. 48, which, however, does not, unfortunately, mention the order of succession in which the healthy and diseased children were born.)

Amaurotic family idiocy.—In the amaurotic family idiocy, thus designated by *Sachs*, heredity shows itself equally in the collateral line. A most characteristic and con-

stant part-symptom of the diseases of which about 50 cases have hitherto been described, is formed by an alteration in the macula lutea of the retina. There supervenes in children, in the course of their first year, an increasing feebleness of mind, paralysis of the extremities and loss of sight amounting to total blindness. In the course of the second year these children die from marasmus. The ophthalmoscopic examination reveals the following typical conditions: A white spot in the macula lutea with a cherry-red point in the centre; to this is added afterwards atrophy of the optic nerve. Although we are still in the dark as to the cause of the disease and powerless in checking or treating it, the fact of its being hereditary in the collateral line is undoubted. As a rule several members of the same generation are attacked, and, what is a remarkable thing, almost exclusively among Jewish families.

VII. Optic nerve.

There is an inflammation of the optic nerve which *Leber* has described as a special disease under the name of "optic neuritis in consequence of heredity and congenital predisposition." It begins as a rule at about the 20th year with a rather sudden disturbance of the central sight of both eyes, while the peripheral parts of the field of vision remain normal. Ophthalmoscopic examination shows at first, as corresponding with a retrobulbar neuritis, no material changes; it is only afterwards that the papilla presents the pale appearance of neurotic atrophy. Although the issue of the complaint which keeps progressing for several weeks or months, is rarely complete blindness, the central (direct) vision is as a rule extinguished, so that the patients can find their way about with great difficulty only. The course of the disease is generally the same in the same family, so that the prognosis depends in the main upon the degree of malignancy which the malady exhibits in that particular family.¹ In some cases headache,

¹*Th. Leber, Die Krankheiten der Netzhaut und des Sehnerven. Graefe-Saemisch, Handb. d. ges. Augenheilk. Vol. 5, p. 827. 1877.*

vertigo and other disorders of the nervous system make their appearance at the same time.

Just as progressive atrophy of the optic nerve in general attacks more frequently the male sex, so this disease befalls almost exclusively the male members of the family. Notwithstanding this relative immunity of the female sex, the virus of the disease is often transmitted in such a manner that of several brothers and sisters, the brothers alone are attacked, while the sisters remain healthy but procreate descendants of whom the male members again in their turn become the victims. We are therefore in the presence not of a direct heredity from parents to children, but of a collateral heredity. The probability that males affected with the disease will produce descendants equally affected is therefore comparatively slight; it is rather the male offspring of the sisters of those male individuals affected with neuritis who are in greater danger, so that the marriage of healthy sisters of neuritically diseased brothers is, in this respect, as in hæmophilia, a source of peril.

VIII. *Glaucoma and hydrophthalmus.*

As our knowledge of the etiology of glaucoma is to-day, after more than 30 years of research, no greater than it was in his time, the opinion uttered then by *Albrecht von Graefe* to the effect that generally speaking the old darkness still prevails, but that heredity plays a very important part among the causes of the disease, is applicable still, and I will therefore quote him literally:¹ "It (heredity) seems to exert the greatest influence in the typical inflammatory glaucoma, which as we often enough see, attacks several members of a family and passes from generation to generation. It has struck me that, when several generations have already been successively attacked, the outbreak gradually occurs earlier, i. e. during middle age or even during the first half of life. In Berlin alone several such families are to be found in which glauco-

¹A. v. Graefe, Beiträge z. Pathologie u. Therapie d. Glaucoms v. Graefe's Arch. f. Ophthalm. 15, 3, p. 227. 1869.

matous diseases have occurred through 3 or 4 generations (possibly even longer) and the members of which generally exhibit the first symptoms between the 30th and 40th year, while the parents and grandparents did not begin to suffer before they were in the fifties or sixties. Once I saw, what must, of course, be a rare exception, glaucoma occur in mother and daughter in the same year, although there was a difference of 26 years between their ages."

The communications on the direct and also collateral heredity of glaucoma are numerous. A distinction as regards sex does not seem to exist. Patients of Jewish descent are seen comparatively often.

Hydrophthalmus which has been described as the glaucoma of childhood has repeatedly been observed among brothers and sisters.

IX. Ocular muscles.

Clonic spasm of the muscles and defects of motility occur as motor disturbances based upon hereditary predisposition. The so-called nystagmus, i. e. the movements of the eyes which in the form of clonic spasms swing to and fro, occurs as a symptom of diseases of the central nervous system and is therefore observed also in hereditary nervous complaints, for instance in *Friedreich's* ataxia, and likewise in hereditary eye-diseases, f. i. retinitis pigmentosa, congenital opacity of the lens, albinismus, etc., in which the weak eye-sight is regarded as the causal factor in the production of the nystagmus. But there is also a so-called idiopathic congenital nystagmus which accompanies a normal condition of the eyes with or without a reduction in the acuteness of vision, and which has occasionally been observed in two or more generations. In these cases the anomaly has more the importance of a cosmetic disfigurement, as the involuntary movements of the eyes do not, like the acquired nystagmus, cause an apparent motion of the external world.

Here also the continuity of the heredity is occasionally interrupted in such a way that healthy female members of the

family transmit the complaint to male descendants. Only recently *E. Clarke* (Hereditary nystagmus. *The Ophthalmoscope* 1. 3. p. 86, 1903) has communicated a very interesting family-tree, according to which nystagmus occurred through five generations in this manner that all the male members had nystagmus, that nearly all of them married, that their children had no nystagmus, whereas of the female members who were all free from nystagmus, the eldest daughter always transmitted the anomaly to her descendants.

Among the inherited congenital defects of motility the most frequent is the incomplete or entirely absent elevation of one or both eye-lids, ptosis. With this constant symptom there may be associated an inability to turn the eye-ball upwards. There may be defects in moving the bulb outwards or inwards, there may be a participation of all the external, but never of one of the internal, eye-muscles, of the ciliary muscle, or of the sphincter pupillæ.

Occasionally we come across other malformations as well, such as epicanthus, a cutaneous fold stretching across the internal canthus which diminishes the space between the eye-lids. In one rare group of cases a defect in the motor apparatus of the eye, hardly or not at all noticeable at birth, has developed later in life as a family affection. The disturbance in the motility is sometimes of a like character in all the members of a family thus affected, f. i. paralysis of the external rectus, or ptosis and simultaneous inability to turn the eye upwards; but this may also vary. Similarly the causes leading to the defects are not uniform, whilst in many cases their pathological anatomy is not as yet understood. It may be a question of morbid processes in the brain, in the nerves or the muscles; thus there are occasionally found in the place of the latter cord-like bands of connective tissue.

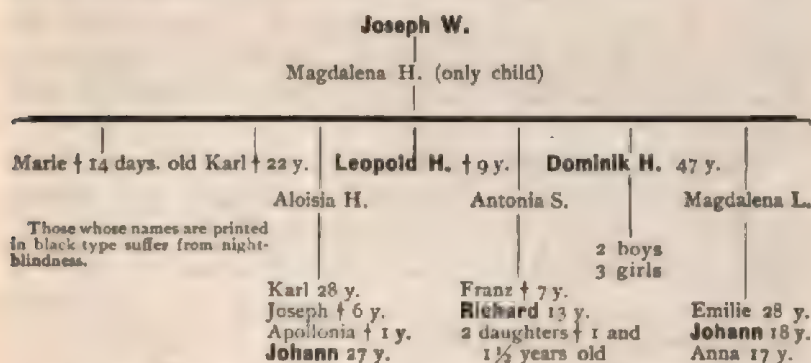
Heredity may become apparent here in a collateral form in brothers and sisters. Frequently, however, direct heredity, without special prevalence in any one sex, can be proved and has even been traced through as many as five generations.¹

¹*Sternheim*, Epicanthus mit Ptosis und die Heredität. *Centralblatt für prakt. Augenheilk.* p. 48, 1898.

Besides these affections which are associated with anatomical lesions of a more or less pronounced character, there are disturbances in the sense for light and colours of undeniable hereditary origin, which we include among the functional disorders on account of our present scanty knowledge as to their anatomical basis.

X. Functional diseases.

Congenital night-blindness.—This rare disease is accompanied by good perception of form and a normal condition of the fundus. It impairs the eyesight to such an extent that the sufferer is incapable of finding his way about in the dim evening light. Even if we ignore the observations made in pre-ophthalmoscopic times because confusion with retinitis pigmentosa might have been a frequent mistake, there have been quite recently published a number of cases in which a most careful ophthalmoscopic examination revealed nothing abnormal. In the majority of these cases hereditary transmission could be demonstrated. We select as an illustration the following family history published by *Cutler* (*Archiv für Augenheilk.* 30, p. 92. 1895).



Here we have again the type in which the disease is transmitted through healthy daughters to male descendants. This "law of heredity of hæmophilia in night-blindness" is the title

of an analogous communication by *Ammann* (*Correspondenzblatt f. Schweizer Aerzte.* 20. 1898). The heredity can, however, show itself in other ways as well. Although congenital night-blindness is found oftener in males than in females, the latter also are attacked sometimes. The father, too, may transmit the disease, and it is quite possible for sisters and brothers to be affected alike.

Congenital colour-blindness. Partial colour-blindness (red-green blindness).—Red-green-blind individuals mistake, under corresponding circumstances, red for green and vice-versa. As these persons are not sometimes able to distinguish red and green objects, they are unsuitable for certain definite occupations only, f. i., the railway service with its red and green signals; otherwise they are as a rule in the possession of a useful eyesight for all practical purposes. The fact that there are ten times as many colour-blind men as women is noticeable in the hereditary form as well. Here again the most common form is that in which from among the children of a colour-blind father the daughters escape the defect themselves, but transmit it to their sons; in other words, among the ascendants of colour-blind persons the grandfather has frequently, and the uncle on the mother's side occasionally, suffered from this abnormality, whereas the parents themselves possess a normal sense for colours. It is therefore nothing strange if brothers often are colour-blind. Nevertheless, the heredity can extend to the female sex as well, and exceptionally it may happen that the transmission proceeds also through male relatives.

Total colour-blindness.—In contrast to partial colour-blindness, total colour-blindness constitutes a very tedious complaint, but occurs fortunately far more rarely. The visual organ is deteriorated in character, the acuteness of vision is diminished, and the outer world appears to the colour-blind eye as clothed in different shades of grey. Total colour-blindness has been observed about twice as often in men as in women, the heredity was a collateral one only, as comparatively often several brothers and sisters have been found to be totally colour-blind.

II. *Microphthalmus and anophthalmus.*

Abnormal congenital smallness of the eye-ball (*microphthalmus*) which can go so far as to leave in place of the organ a rudiment visible only with the microscope (*anophthalmus*) has been observed several times in one and the same family. *Microphthalmus* may be transmitted from the parents to their offspring and even through 3 generations.¹ It is but natural that there should be a dearth of observations on the propagation of individuals with double congenital *anophthalmus*; but the hereditary form of one-sided *anophthalmus* has been observed, for instance by *Landsberg*:² a man with congenital left *anophthalmus* procreated by a healthy wife two children of which the first-born exhibited right *anophthalmus*.

In conclusion, the question must here be considered whether parents can transmit to their offspring diseases of the eye acquired during life and not resting upon a congenital predisposition. Has for instance a married man who has had one of his eyes enucleated cause to apprehend that his children will be born with *anophthalmus*? So far no such case has been reported. *Mulder*³ experimented for 6 years on several generations of rabbits. He enucleated the right eye in about 200 animals, but could produce in the offspring no abnormality of the eyes.

There are also no clinical-statistical proofs as to the hereditary transmissibility of non-traumatic diseases of the eye. The only two observations on the subject, one by *Magnus*⁴ and the other by *Fuchs*⁵ have been quoted time and again: *Magnus* speaks of a man who became blind through *blenorrhœa neonatorum*, and who begat two children with *microphthalmus congenitus*. *Fuchs* mentions the case of a doctor with right congen-

¹*Martin*, Ueber Mikrophthalmus. Inaug.-Dissert. Erlangen, 1888.

²Vier Fälle von Anophthalmus congenitus. Klin. Monatsbl. f. Augenheilk. 1877, p. 141.

³Ein Fall von Lenticonus posterior, anatomisch untersucht. Klin. Monatsbl. f. Augenheilk. 1897, p. 409.

⁴Die Blindheit, ihre Entstehung und Verhütung. Breslau, 1883, p. 139.

⁵Die Ursachen und die Verhütung der Blindheit. Wiesbaden, 1885, p. 8

ital microphthalmus whose father had lost his right eye during childhood through iridocyclitis.

Magnus quotes, however, in the same place 9 other cases where either husband or wife, or even both together, had become blind before their marriage through blenorrhœa neonatorum, atrophy of the optic nerve, etc., but who, nevertheless, generated children with healthy eyes. But isolated cases are not sufficient to settle this question nor can they in any way demonstrate the influence of heredity, or exclude the chances of accident.

With the material of facts at our disposal, we are justified in regarding the probability that acquired eye-diseases in the parents will influence the development of the eyes in the offspring, as practically non-existent.

XIX

Diseases of the Lower Uro-Genital Organs and Physical Impotence in Relation to Marriage

XIX

DISEASES OF THE LOWER URO-GENITAL ORGANS AND PHYSICAL IMPOTENCE IN RELATION TO MARRIAGE'

By **Professor C. Posner** (Berlin)

*1. Diseases of the testis and epididymis.
Disturbances in the production of the seminal fluid.*

The greatest importance in all questions pertaining to the subject of marriage is naturally claimed by diseases of the testicles, since the normal function of these glands constitutes the primary condition necessary for the fulfilment of the real object of marriage, which is the perpetuation of the species. Nature has not by her anatomical arrangements been lavish in providing the male organs of generation with means of protection. They are not like the ovaries hidden in the interior of the organism, but lie in their sac-like receptacle outside the abdominal cavity in a rather exposed situation where they are subject to all kinds of injuries, contusions, punctures and lacerations. They have, however, as a compensation for this shortcoming so to speak been endowed with an almost wonder-

'It has been found impossible to avoid introducing in this article subjects which have already been discussed in other chapters of this work: this is particularly the case with some of the sequelæ of gonorrhœa, as f. i. the cicatricial induration of the epididymis, which constitutes the principal cause of the generative impotence in the male. It affords me gratification to find myself on the whole in agreement with the views expressed by *Neisser* on these points. I may say the same thing with regard to various other points casually arising in connection with the subject of impotence and which are dealt with more minutely in the chapter contributed by *Moll*.

ful productiveness which seems to exceed by far the necessary requirements. It is not only that with each ejaculation millions of spermatozoa are discharged and eventually transmitted into the female genital canal, one of which alone suffices to impregnate the ovum, but even in diseases of all kinds there always remains for a long time a perfectly sufficient function. If, for instance, after a severe general illness the state of nutrition is ever so low, the production of seminal fluid and with it the sexual desire are, nevertheless, very slow in disappearing. In fact, we know that on the contrary consumptives often manifest shortly before death a strongly-marked sexual desire accompanied no doubt by the secretion of a perfectly serviceable spermatic fluid. Even in local affections the process must have gone already very far or it must have taken place in quite distinct spots for the spermatogenesis to be destroyed in reality. In tuberculosis, in carcinoma, there still remains for a long time a sufficient amount of functionally capable substance; and just from this point of view it is of interest that in purely mechanical disturbances which the production of semen experiences through cord-like cicatrices in the region of the epididymis, there can still take place in the testicle itself, even after many years, a formation of fully-developed spermatozoa. What is particularly necessary in judging the influence of disease of the testes upon the generative faculty is, not to lose sight of the fact that unilateral affections may cause a disappearance of the production of semen under circumstances which but rarely occur. It would appear as if nature intended to provide in the bilaterality of the organ an additional suitable protective agency.

Congenital absence of the testicles.—The occurrence of a congenital developmental anomaly is a comparatively rare marriage-obstacle. A congenital absence of both testicles has occasionally been reported; the probability is, however, that in most cases of the kind there was not an actual absence, but an ectopia only, a retention of the testicles in the abdominal cavity, with which, it must be admitted, there is often associated an insufficient development, as we shall see later on. Even the complete absence of one testicle only, which, as already

mentioned, would not impair directly the generative faculty, may be doubted.

What has been observed, though once only, is a monorchism caused by the fusion of the two testicles—equally a circumstance of no practical importance to the question of sterility.

Atrophy.—Greater value must, however, be attached to the conditions of atrophy, or better said, of deficient development. A congenital one-sided "atrophy" i. e. a well-marked smallness of one testicle is not infrequently observed in otherwise quite vigorous individuals, and not rarely in combination with a particularly strong compensatory development of the other healthy testicle. But a real double aplasia also does occur, usually, though, in association with other morbid phenomena such as general backwardness of the growth, "infantile habit," or with deviations in the development, the so-called "female habit." Such conditions are seen f. i. in cretins who look as long as they live like big children, in myxœdema until successful treatment is instituted, but also in individuals who belong to the category of homosexuals and in whom often enough the shape of the pelvis, the growth of hair and the development of the breasts are already evidences of such an *error naturæ*. The spermatogenesis is, however, as a rule in these cases by no means quite absent; in fact, from the anatomical and histological point of view we cannot admit here the existence of an impotence; it is more the psychical deviations, the absence of sexual desire or a sexual inclination towards the same sex which come into play; psychical rather than physical impotence makes it therefore necessary for the medical consent to the marriage of such perverts to be withheld when it is, say, for prudential reasons of some sort or other contemplated.

I should like, besides, to point out especially, that a big or small size of the testicles is in itself never to be looked upon as a sign of greater or lesser virility. We must be particularly careful not to overestimate the importance of very large testicles, as is frequently done by the lay public. Quite apart from mistakes of a gross nature,—excessive hyperæmia, hydroceles, varicoceles,—the absolute bigness of the organ is of

course, no guarantee that the secreting glandular elements are present in relatively large numbers. If we desire to be informed as to the functional capability of the testicles there is no other means than the microscopical examination of the seminal fluid in as fresh a condition as possible—and even here certain precautions are necessary of which we shall speak further on.

An acquired atrophy of the testicles is said to occur after certain general diseases. That it does not constitute the rule in consumptives has already been mentioned. On the other hand it seems for instance that chronic lead-poisoning has sometimes this result, and it might therefore be advisable in regard to persons who have a great deal to do with lead to bear this point in mind under certain circumstances. The assertion, for which there is *prima-facie* a great improbability, that nephrectomy is also capable of causing a cessation of the spermatogenesis has been refuted by *Legueu* and *Cathelin*. Injuries to the back of the head can lead to a rapid diminution of the sexual desire and, as it appears, in this way to an atrophy through inactivity. Although parotitis epidemica is equally accused of being capable to lead to such a result, I must suppose that this takes place always in a round-about way by means of an epididymitis, and that it is therefore a form of impotence which we shall have yet to discuss.

"Atrophy" of the testicles is a physiological accompaniment of old age, though we are certainly not in a position to lay down a general time-limit, applicable to all cases. Just as the *potentia cœundi* may be retained up to a most advanced age so the function of the testicles may remain present in even extremely old men. Those cases are rare in which congenital aspermatism, that is complete absence of seminal fluid, is observed without the co-existence of some mechanical obstruction. But occasionally we do come across men who are apparently quite healthy and vigorous, whose testicles are normal in size, and who though they have never been ill, do not produce a real spermatogenic fluid. The prognosis would seem in these cases to be downright unfavourable.

Ectopia.—Allied to the above-mentioned cases of deficient development of the testicles are those in which the organs have

not taken the prescribed course along the inguinal canal into the scrotum, but have remained in the interior of the abdominal cavity or of the inguinal canal, malformations which are designated as ectopias of the testes. From the point of view of marriage those cases are the most interesting which are accompanied by other developmental abnormalities, especially incomplete closure of the raphé, smallness of the corpora cavernosa, etc., and which may simulate a perfect female type; hermaphroditismus spurius. Here the poorly developed scrotal halves appear as labia, the penis as clitoris, and as the testicles can as a rule hardly be felt, the question of the real sex is not cleared up—unless at the autopsy—until a sexual inclination is experienced towards women, when, as it has repeatedly happened, attempts at intercourse result in impregnation. The cases are very numerous,—and they have recently been repeatedly tabulated with great care and praiseworthy industry,—in which such individuals were not only christened as females, but where they actually married as women, or where they could perform sexual intercourse both as women and men. A medical examination establishes as a rule the real state of affairs, but it can only be regarded as concluded when the spermatic fluid has been subjected to an investigation. It is sufficient to have said this much, so as to recall things which are indeed known to all of us.

Cryptorchism.—More frequent is the occurrence of ordinary cryptorchism, that is the retention of the testicles without any other striking arrest of development. Abdominal or inguinal testicles need not as such have any effect on the virility, especially as here also the affection is very often a uni-lateral one only. With regard to abdominal testicles there is not much to say; very often it is absolutely impossible to ascertain their presence on account of their concealed situation; therapeutically nothing can be done. The inguinal testicle represents a more serious abnormality. In the first place it is still more prevented from developing by the pressure of the surrounding parts; it remains almost always remarkably small. Moreover, it is on account of its exposed position subject to multifarious injuries, blows, contusions, etc., which it cannot avoid, so that most serious strangulation-symptoms are apt to arise. Finally, and

this is of the greatest importance to the questions which interest us here, a testicle so situated has an especially marked tendency towards malignant degeneration, particularly towards the formation of sarcoma, which is extremely dangerous to life not only in itself but also by a rapid development of metastases in the lymphatic glands of the abdominal cavity. The significance of inguinal testicles to the individual affected must therefore be judged independently of the question of virility: such a testicle forms so marked a *locus minoris resistentiæ*, especially during the period of sexual activity that its presence necessitates the most careful consideration on the part of the physician who is approached for the purpose of giving his consent to a projected marriage. For this reason the attempts to cure the defect by an operation are truly justified. It is best to carry out this surgical intervention, which aims principally at pulling down the testicle and fixing it at the lower pole of the scrotum, at an early age; the operation is the easier and the outlook the more hopeful, the less increase there is in the volume of the testicle, an increase which takes place previous to puberty.

Inflammations.—With regard to inflammations which affect the testicle, it is not possible to distinguish them sharply from the affections of the epididymis. The bulk of them are formed by gonorrhœic inflammations, as to which there is at the present day no doubt whatever that the infection takes place by means of the gonococcus (perhaps, also by one of the secondary causative agents of the disease) along the vas deferens. More difficult to understand is the predilection which some other infectious diseases, particularly parotitis epidemica—and also enteric fever—show for the epididymis. The probability is that it is a case of genuine metastasis, similar to the one which often appears in the epididymis in connection with tuberculosis. Acute gonorrhœal inflammation does not play any very great part in relation to the subject of marriage. Nevertheless, it is to be remembered that an apparently extinct gonorrhœa may break out afresh very suddenly and unexpectedly in consequence of sexual excesses, such as are very often indulged in by newly-married people. Whether the wearing of a suspensory bandage has indeed the prophylactic effect attrib-

uted to it, I consider, to say the least, doubtful. There is no need to enter here into a special discussion of the treatment of acute epididymitis, but it is the consequential results of this disease which are of the greatest importance to the subject of marriage and the married state. It is well known that the prognosis as such is on the whole favourable. The swelling which arises very acutely goes down as a rule without suppuration taking place; where the latter does occur the condition becomes rather more serious, as in spite of most careful treatment a large portion of the testicular substance itself frequently dies after becoming necrotic. Generally, however, the course of the illness is such that the acute swelling reaches its acme in a few days, that pain, pyrexia, etc., then begin to subside, but that the infiltration itself persists yet for a while, becoming soft and undergoing absorption only very gradually. Isolated nodules in the epididymis can even then be felt for a long time yet. It is these nodules which constitute the danger: they are elongated cicatrices which compress the narrow and intricately-twisted canal of the epididymis, displacing and destroying it. In this way a mechanical obstruction is created which can arrest completely the passage of the spermatozoa from the testicle into the vas deferens. The vas itself remains, however, as a rule permeable, as investigations made by *Simmonds* especially have shown and as I can confirm from personal observations.

Impotentia generandi. Azoospermia.—This is the most frequent and most important cause of the generative impotence of man. We must not, of course, take this to mean that every epididymitis leads invariably to this unfortunate result. In the first place a great many cases heal perfectly under the usual suitable treatment without leaving behind any demonstrable anatomical or functional disturbances. It is not easy to state this in figures of percentage, but I do not think I am far wrong in allowing this issue in about a third of the cases. But then the principal condition here also is an affection of both testicles, except in the case of special and previously-existing diseased conditions. In this respect the examination of the patients leaves one very frequently in the lurch. I have seen a fair number of patients with complete azoospermia of an undoubtedly epididy-

mitic origin who maintained with absolute certainty that they had had the disease on one side only although there were traces of the inflammation visible on both sides. Unfortunately such patients do not as a rule come to us until many years have elapsed since the illness took place, when it is sterility which induces them to seek medical advice, so that frequently 12, 15 or more years will have passed since the attack of gonorrhœa. Under such circumstances we cannot place much reliance on the memory of the patients and we must examine for ourselves with the greatest care if we wish to obtain a correct view of the situation.

Besides an examination of the local conditions, the principal item is naturally an examination of the spermatic fluid itself. It has gradually come to be recognised—and we are indebted to *Fürbringer's* repeated suggestions for this practical success—that the semen of such patients need hardly be in any way outwardly distinguishable from that of healthy persons. Just as their virility may be a perfectly unimpaired one (sometimes even strikingly great) so the quantity of the ejaculated fluid may be in no way diminished. On closer inspection, though, it often appears markedly light and thin, but it requires a great deal of practice to be able to tell the difference and I am not inclined to advise anyone to draw hasty positive or negative conclusions from a mere inspection of a specimen of seminal fluid. Neither does the odour present anything characteristic, seeing that it is derived from the prostatic secretion. It is only the microscopical examination which can be regarded as decisive.

Generally speaking, the latter is directed towards ascertaining whether there are any spermatozoa at all; neither the quantity nor the mobility of the spermatozoa present is so important as this cardinal point. In a typical case of sterility in consequence of double epididymitis the examination of the fluid reveals nothing but amorphous masses, amylaceous bodies, particles of lecithin and, on cooling, the frequently exquisitely-shaped sperm-crystals. The Florence reaction with iodine and potassium iodide takes place promptly. It is advisable to make this examination also several times before giving a definite

opinion. The state of preservation of the semen may sometimes be so bad through bacterial decomposition—though I consider this rarely to be the case—that it is no longer possible for the various constituent elements to be recognised properly; under such circumstances it is helpful to examine stained specimens which show the heads of the spermatozoa especially well marked. Some cases are characterised by a striking paucity of spermatozoa, a so-called oligozoospermia, which is, perhaps, the result of some morbid condition, but which may also—though very rarely—appear temporarily after very frequently repeated ejaculations. It is in these cases of oligozoospermia particularly that I have successfully employed the staining method for the recognition of the spermatozoa present. The mobility can of course only be ascertained by the examination of perfectly fresh semen; after a few hours, especially in cold weather, every trace of it has disappeared, and neither the warming of the slide nor the addition of some liquor potassæ can do any good. One must be very careful in expressing an opinion about the mobility being “slow” or “quick.” Even where there is already some rigidity of the spermatozoa present, one may find certain indications in their shape: those which had moved vigorously become rigid as a rule in a twisted zig-zag manner, and those which were formerly immobile, as seen for instance in so-called necrospermia, are when rigid straight and rod-like. A great deal is also said about malformations, and their presence diagnostically utilised; poorly developed heads, swollen misshapen necks and centres are not infrequently prominent features, but I consider it very doubtful whether it is justifiable to venture even on a suspicion of pathological conditions on account of such manifestations; very likely accidental products or possibly artificial effects in the preparation of the specimen are accountable for them.

We must briefly refer here to the ticklish question how the necessary material is to be obtained. It is generally sufficient in the case of intelligent patients to tell them simply that semen is required for purposes of examination, and they will as a rule bring it in a very serviceable condition. Where more detailed instructions are needed, I recommend the employment

of condoms which must be fastened immediately after the ejaculation has taken place. As I have already mentioned I do not attach any decisive value to the freshness of the semen—there is no harm if it is examined when it is a few hours old! In some cases, by the way, we can answer the fundamental question whether there are any spermatozoa or not, by a much simpler method and one should never omit making an attempt in that direction. In a great many individuals it is possible by rectal pressure on the vesiculæ seminales to bring to light some secretion which contains in addition to other elements spermatozoa as well; if no such secretion appears at the urinary meatus there may be some in the urine evacuated immediately afterwards, as pointed out some years ago by *Rehfish* especially, in which case it can be obtained for examination by centrifugalisation. I have often been in a position to re-assure patients on the subject of their dread of sterility by a positive result of an examination made in this way, without asking them to bring me some semen—a procedure which is after all distasteful to a great number of people. A negative result does not of course prove anything.

Where complete azoospermia is finally established, the prognosis is generally a very sad one: the generative faculty must be considered as absolutely extinct. It is true that our medical sense cannot reconcile itself to the idea that a, perhaps, very small cicatrix is capable of causing the entire loss of function of such an important organ, and we are always looking for ways and means to bring about the disappearance of this obstacle to procreation. At the beginning of the illness this is probably still possible; if the cicatricial or rather cicatrising infiltrations are taken in hand immediately after the acute inflammation has subsided, they can very likely often be removed by absorbent remedies, heat, fomentations, massage, etc., or at least prevented from producing complete destruction. What a wide field is probably thus opened to prophylactic therapy! But what about the old scars, formed long since, which we come across in the majority of cases?

As to internal remedies, there is no doubt whatever that they are all ineffective. Especially potassium iodide and simi-

lar drugs have been tried again and again, but even in cases which one might feel justified to ascribe to syphilis rather than gonorrhœa I have never derived the slightest benefit. One might, perhaps, look with more confidence upon physical remedies. Massage is by some regarded with very great favour; personally I have often employed it, especially also in the form of vibratory massage, but unfortunately without success; nor do I know of any reliable cases that have been published on the subject. It is no different with vapour-baths of all kinds, with applications of ichthyol or iodine, with mud-baths, fango and sulphur-mud. For all that, one will always be tempted, especially in the more recent cases, to try all these remedies; the possibility of success cannot altogether be excluded.

Fürbringer was, as far as I know, the first to ventilate the question of surgical interference. The original idea was that if the nodules are situated in the vas deferens, a sort of treatment like that of stricture might be adopted in the form either of vasotomy or of dilatation by bougies. Unfortunately, however, the vas deferens is but rarely attacked; in the cases operated by me it was always found perfectly free from disease and easily permeable by thin elastic bougies. The obstacle is situated more in the epididymis itself, and here the cord-like cicatrices and the canal are so intermixed that it is absolutely impossible to entertain the idea of exposing and re-establishing the lumen. All that might possibly be done is to extirpate the affected parts totally and to establish by a direct anastomosis between the vas deferens and the testicle an uninterrupted passage for the spermatozoa. A preliminary condition would of course have to be the presence of spermatozoa in the testicular substance. A priori one would imagine that after an inactivity of the testicles extending over many years such an atrophy is bound to ensue that no more spermatozoa are formed. But strange to say this is not the case, as *Simmonds* has long since shown. If in order to find this out the testicles are exposed ("surgical revision" as *Fürbringer* calls it) one can still find even after 19 years perfectly developed spermatozoa; that they are not mobile is no proof that their vitality has disappeared, since their self-mobility, while in the testicles, is altogether

absent or at least very small. I have repeatedly been able to ascertain the same state of affairs by a simple puncture of the testicle by means of a hypodermic syringe, a procedure which is not at all dangerous and which I wish here to recommend for that purely diagnostic object.

I have attempted in conjunction with *J. Cohn* to establish such a vaso-orchidostomy in a fairly large number of cases; we have not however hitherto been so fortunate as to achieve a positive result. The reason for this may possibly lie partly in the unfavourable material which consisted almost of very old cases, and partly in the circumstance that our *technique*—the details of which will be reported in a separate communication—has only gradually been evolved by ourselves. But I desire at any rate to confirm the justification for this operation in the sense advocated by *Fürbringer*. We are encouraged in this respect by a case treated successfully in America by *Martin*; judging also from similar experiments which have been made for the elimination of tuberculous nodules in the epididymis, there is no doubt as to success being within the range of possibilities; and I am firmly convinced that a favourable result will eventually be obtained in this way, though perhaps only in a small number of cases.

But for psychical reasons, too, I consider the surgical operation as justified, even if we do not regard it otherwise than from the standpoint of "surgical revision." One must have witnessed rather frequently the disappointment experienced by patients when told that they suffer from azoospermia, to realise with what joy they cling to the slightest hope and how animated they are by the desire to try the last possible remedy. The knowledge alone that with the surgical operation at least everything has been attempted which lies within the power of man has on most of them an uncommonly appeasing effect. It is only rarely that the contrary happens—but still there are cases where not only the husband but the wife also accepts the information that the sterility is absolute, with perfect indifference or even with unmistakable satisfaction. As a rule, however, the married couple cling to this last straw of hope. One must, of course, be careful not to exaggerate the chances in any way.

That the operation is, as far as human foresight can tell, devoid of danger and that the process will heal up in a few days may safely be promised, but as to the main result, it is best to describe it as exceedingly doubtful if one wishes to avoid future reproaches.

Where a genuine sterility is established beyond doubt, and where all the remedies employed have proved futile, it is in my opinion the duty of the physician to communicate the truth fully and without reservation. A long delay or, perhaps, a misrepresentation of the true state of affairs is unscrupulous conduct. Very often most important decisions depend upon the medical opinion, such as family-arrangements, the adoption of children, and so on. The whole subject requires extraordinary tact and circumspection on the part of the medical man. It is particularly necessary to insist upon one point, namely that husband and wife should be equally enlightened. We have only to recall the very sad family-tragedy which was reported a few years ago, in which the husband was quite aware of his sterility, and the wife who knew nothing about it became nevertheless pregnant. Of course if the husband alone consults the physician the latter is in these cases as always bound to maintain professional silence, but it is advisable to point out to the patient that it is his duty to tell the wife the whole truth if only for the humane reason to save her from constantly reproaching herself that she is the cause of the sterile marriage and also to put an end to the vain cures which she is openly or secretly undergoing at the hand of gynaecologists or quacks. It is worth mentioning here that unmarried men require occasionally for the purpose of opposing affiliation-claims medical certificates as to their sterility; so as to avoid substitution it is at any rate advisable when issuing such certificates to state clearly that the opinion expressed refers to the "specimen of semen submitted for examination." (*Fürbringer.*)

There are no particular instructions on the subject of sexual intercourse during married life indicated by sterility as such.

Oligospermia.—The question of oligospermia is more difficult to estimate. Impregnation is not of course impossible,

although the chances of its taking place are certainly smaller. The cause may possibly lie very often in a beginning cicatrization in the region of the seminal passages, and massage-treatment may in such cases be as yet effectual. At other times an arrest in the spermatogenesis may be due to one of the causes mentioned above; in disturbances of the general health, especially, a temporary occurrence of this kind frequently takes place. At all events the prognosis of these cases cannot be described as unfavourable.

Necrospermia.—Necrospermia (*Finger*) is the result of local processes in the vesiculæ seminales or the prostate. The spermatozoa, though produced in sufficient quantity and with sufficient vitality, are killed and rendered sterile particularly by suppuration. In these cases a rational local treatment is often of great advantage; it stands to reason that as long as the active inflammatory process continues, conjugal intercourse must be abstained from.

Tuberculosis of the testes.—Among the remaining infections of the testicles, tuberculosis plays the principal part. It is as well to point out here again that a genuine primary tuberculosis of the epididymis and testicle does not probably exist and that the point of entrance of the infection must be looked for somewhere in the body. It is important from our present point of view to notice that a direct invasion from the urethra or prostate is getting more and more to be regarded as improbable; the researches of *v. Baumgarten* and *v. Bruns* seem to be fairly conclusive evidence against it. The assumption is rather that the epididymis is in itself predisposed to tuberculous disease to a certain extent, whenever there are bacilli present in the circulation; and that every injury or inflammation renders it into a specially favourable soil. In every individual who possesses anywhere a tuberculous centre the danger of this localisation is therefore very great, and should he contract an epididymitis or suffer an injury in that region the danger becomes highly accentuated. From this we conclude in the first place that gonorrhœal epididymitis in consumptives must be treated and watched with the greatest care, and that it is imperative not to rest contented with the simple diagnosis

of gonorrhoeic epididymitis but always to bear in mind the possibility of a tuberculosis. If the epididymis of such a consumptive patient contains any nodules the probability is not very small that tubercle bacilli are there present too. This, again, has a certain amount of influence on our decision respecting the question of a contemplated marriage. Small as the danger is, it cannot be altogether denied that patients with tuberculosis of the genital organs are capable of infecting their spouses by means of the sexual intercourse; semen containing tubercle bacilli can occasion a transmission under certain circumstances, and I consider (as already stated by *Kaminer* in another chapter) that the presence of manifest tuberculosis of the genital organs is a contra-indication against the consent to the marriage. This contra-indication is of course stronger the greater the extent of the morbid changes. As soon as marked caseation has appeared or, perhaps, fistulæ formed in the epididymis or the testis, the danger is naturally very much aggravated—quite apart from the circumstance that the congestion which accompanies coitus produces in all these cases additional injuries in the diseased organs themselves.

The question now arises whether we possess any remedies which are capable of effecting a cure or at least an innocuousness of the tuberculous deposits.

The obvious idea of an early one-sided castration would seem to be worthy of realisation if we were sure that we are dealing with a primary lesion the removal of which from the body could afford a hope that the entire organism would thereby be protected. As already stated, this is not the case. Closer examination reveals almost always an affection of the neighbouring organs, such as the prostate and vesiculæ seminales, which is already so far gone that an excision of the testicle appears to be perfectly hopeless as a method of treatment. Castration can on the whole come into question at later stages only, namely when intensive changes have taken place in the testicle, when there are open wounds in it accompanied by severe pain and discomfort so that the organ is on the one hand no longer of any value and on the other looked upon by the patient as a troublesome annoyance. And even then it is very hard to

make up one's mind to a double castration, even in such cases the well-known symptoms of depression may set in. On any other remedies, either internal or external, we cannot, unfortunately, rely; neither the general treatment with tuberculin, nor the administration of cinnamic acid according to *Lunderer*, or any other medicamentous, institutional or climatic cure is capable of causing a restitution. Improvements are occasionally seen, especially if open wounds are at the same time treated surgically by scraping or astringent remedies, but a real cure can hardly be expected. It is true that sometimes very extraordinary spontaneous cures take place in the sense that the nodules appear to be perfectly encapsuled, lying among the tissues quite inactive. If it is possible at the same time to ascertain that the prostate, vesiculae seminales and urethra are also free from bacilli, there is perhaps after all no harm in permitting in such cases the exercise of conjugal intercourse: besides, we must also not forget that tuberculous people especially very often disobey the prohibition of marriage or of sexual connection.

Syphilis.—Syphilitic tumours of the testicles do not require more than a brief mention: their presence naturally constitutes an absolute reason for prohibiting sexual intercourse. Sterility also is frequently caused by them, but is nevertheless said to offer a fairly good prognosis if a very energetic anti-syphilitic treatment is instituted. Personally, as I have said above, I have not been successful in these cases either.

Tumours.—The situation is somewhat more complicated as regards the real new-growths, adenoma, enchondroma, sarcoma, carcinoma, etc. We start, of course, on the supposition that these tumours are as yet contained within the organ, so that the scrotum is not affected and that there are no open ulcerous surfaces. In such a case there does not seem to be any necessity where the tumour is benign to prohibit sexual intercourse: the generative faculty, too, may remain unimpaired for a very long time. Sarcoma and carcinoma when once recognised necessitate in the first place extirpation under all circumstances, of the whole of the testis with the epididymis: frequently, however, they are neglected at the beginning or mis-

taken for something else, and we can then ascertain that in spite of an existence of the nodules extending over many months, neither the sexual desire nor the virility or the generative faculty has in any way been affected. We must now ask ourselves whether there is in the case of these tumours a danger of transmission through conjugal intercourse. Several instances have been named wherein "genital cancer" of the husband, in which must be included in the first place cancer of the testicle, has resulted in causing a cancerous disease in the wife. As far as I could look them up in literature none of these cases seem to be capable of withstanding serious criticism. The carcinoma of the wife appeared as a rule in such situations as have no actual relation with the affected part in the husband, so that I cannot help regarding this form of "cancer à deux" as anything else but mere accident. Of course, where there are open carcinomatous ulcers, that is, in secondary or primary affections of the scrotum (sweep's cancer) conjugal intercourse must be regarded as absolutely inadmissible, seeing that an implantation of cancer-particles is not then exactly impossible, a point which will be touched again in the discussion of the carcinoma of the penis.

Hydrocele.—Following the real tumours we have to consider next in succession the cases of effusion into the tunica vaginalis, namely, hydrocele, spermatocele and hæmatocele. The two first-named affections run very often for a long time almost without any symptoms; the patients experience, it is true, a slight dragging and a certain amount of weightiness in the testicles, but they do not attach much importance to this and follow their ordinary mode of life; not infrequently the diagnosis is made only accidentally during a careful examination especially by the translucency-test when the presence of fluid is detected, particularly if the hydrocele has developed slowly in connection with an acute epididymitis. With the increase in the growth of the tumour the symptoms become worse; in extreme cases most serious cohabitation-obstacles may arise as the penis gets lost among the large mass of tumour. For a long time, however, the testicular parenchyma remains almost intact in spite of the considerable pressure exercised upon it by

these large quantities of fluid, and the production of semen goes on quite normally. It is only during later stages that an atrophy of the testicle occurs, so that it is quite possible for a hydrocele to produce eventually impotence in this way, provided either that the disease has affected both sides, a thing which does happen, or that the other testicle has become sterile from some other cause, as f. i., epididymitis. After the evacuation the function is said to re-appear. That surgical intervention is indicated in hydrocele is perfectly clear. It is needless to say that internal absorbing remedies or external ointments are entirely useless; the sole point which might require consideration at the present day is whether the treatment adopted should consist of palliative puncture, of tapping succeeded by the injection of irritating substances, or of a bloody radical operation. The main object is of course a curative effect, and I have no desire to enter here into a discussion of the vexed and still undecided question whether injection or radical incision is the better course to adopt or into that of the value of the several operations recommended. From my own practical experience, however, I should just like to mention that in married men particularly one experiences great difficulties in this connection. The patients do not at all like the idea of an operation at the testicles which necessitates at all events a rest in bed for several days; they are generally afraid that their illness would be misinterpreted and attributed to a sexual disease in the narrower sense. I know quite a number of gentlemen who prefer to undergo about once in every 3 months the harmless procedure of tapping, as they are enabled in this way to keep their affection secret and as they are not in the least inconvenienced by this arrangement, a point of view which one must admit is quite justified and which the physician will do well to bear in mind as far as practicable!

Whether it is a spermatocele and not a hydrocele with which we have to deal can as a rule be established by puncture only. Neither in the external appearance nor in the translucent conditions is there generally any indication in this respect. Besides, a diagnosis of spermatocele must be made only when there are spermatozoa in large numbers, and the fluid is in

consequence somewhat turbid. The presence of a few spermatozoa is said to be demonstrable in many cases of hydrocele, though personally I have never been able to satisfy myself that it is so. The importance of genuine spermatocele to the sexual function is probably a little greater than that of hydrocele, for we must assume that there is somewhere an open communication between the seminal passages and the tunica vaginalis, which in its turn seems to prove that there is some obstacle in the natural seminal ducts. It is therefore imperative in all these cases to take notice whether the ejaculated semen contains any spermatozoa, since a spermatocele may perhaps constitute the first indication of a developing sterility. It may not be out of place to mention here that in a case observed by me and published by *Vertun* the spermatozoa contained in the spermatocele-fluid were very well formed and endowed with a very vigorous mobility, a proof that the secretion of the accessory glands is at least not always necessary to make the spermatozoa mobile.

With regard to hæmatocele there is not much to say in this place, as it is always the result of an injury.

Varicocele.—Of very great importance, however, from the point of view of the marriage question is the affection known by the very inappropriate name of varicocele, and which does not consist of anything else but a varicose dilatation of the venous branches in the testicle and scrotum going to the spermatic vein. Slight degrees of it are seen exceedingly often, more accidentally, in persons who suffer from so-called abdominal plethora or from chronic constipation, etc., without it being necessary to attach any very great importance to the matter. More severe forms give rise already to some inconvenience, and other cases going by the name of "neuralgias" are explained by a venous congestion of this kind. In these cases the wearing of a well-fitting suspensory bandage is often sufficient to remove the complaints.¹ On closely questioning the patients,

¹Translator's note: It may not be uninteresting to mention in this connection the following case which is at the moment under my observation. A young man in a position to get married and engaged to a girl whom he loves suffers from a slight varicocele. He has been wearing at my

however, one frequently ascertains that individuals of this class are greatly given to sexual excesses in the form of masturbation as well as in that of unreasonable coitus. Young married men form a large contingent of this category of patients. It becomes then necessary to regulate somewhat their sexual life and to prohibit in particular the too frequent repetition of the sexual act. If consulted by candidates for marriage there is no occasion to regard this affection as a contra-indication; on the contrary, one is justified in anticipating from the more regular performance of the conjugal intercourse an improvement of the condition. The above-mentioned recommendations, perhaps in combination with hydro-therapeutic treatment, will as a rule prove sufficient; the advice to undergo a surgical operation (excision of the venous bundles) is indicated in a comparatively small number of cases only.

Neuralgia.—I have just mentioned the so-called neuralgia of the testicle as being in many cases an affection of a somewhat doubtful nature. But there are cases of pain in the testicle which cannot be included in this class, but which depend decidedly on simple hyperæmia, especially if frequent sexual irritations take place at the same time which do not meet with the necessary gratification. They are cases consisting of localised attacks of pain in the testicle as well as in the spermatic cord which reach sometimes almost unendurable proportions, constituting a typical "bridegroom's disease." This complaint is also experienced as a matter of course by young men who are

recommendation a suspensory bandage for some years, with the result that the varicocele has remained practically at a standstill. He wishes to get married and I am constantly telling him that there is no reason why he should not do so, and yet he is afraid to take the step because he cannot do without the suspensory bandage. When he takes it off his pain returns and he is obliged to put it on again, and for so long as this will go on he has decided to remain a bachelor. The consequence is that he is becoming more and more hypochondriac, he is tormented by the knowledge that his conduct towards the girl to whom he is engaged is reprehensible, and I am at a loss what to do for him. The idea of an operation has occurred to me, but the extent of the varicocele hardly justifies such a step, and I cannot even say with certainty that he will be able to do without the suspensory bandage if an operation is performed. Altogether this is one of those cases which do not go towards making a doctor's life a happy one

in the habit of subjecting themselves to strong erotic influences, in such places as music-halls, "free-and-easies," and the like, and who yet refrain on principle from indulging in actual sexual intercourse. These are, by the way, the sole evil results which I have observed in connection with sexual continence, and they, too, arise under certain definite and avoidable circumstances only. Special treatment is in these cases, of course, not necessary, in most of them an appropriate earnest explanation is all that is needed. Medical advice in the direction of recommending a regulated sexual intercourse is, of course, indicated in the case of married men only; for the rest not only physical but also—what is more important—psychical continence must be enjoined.

2. *Diseases of the vesiculæ seminales. Disturbances in the discharge of the seminal fluid.*

Physiology of the vesiculæ seminales.—

The functions which the vesiculæ seminales have to fulfil in the physiology of the sexual activity are not yet clearly understood. It is still a doubtful point whether they serve exclusively as reservoirs of accumulated semen until the moment of ejaculation, and also whether the secretion produced by them exercises any influence on the vitality of the spermatozoa. This secretion constitutes at any rate a not inconsiderable part of the perfected seminal fluid to which it imparts its peculiar gelatinous consistency; the globulin-bodies contained in it also account principally for the coagulation which occurs rapidly in semen when it gets cool, and for the stiffness of the stains which semen forms when it dries on linen. In examining the secretion expressed per rectum—it is easily recognisable with the naked eye by its small lumps resembling sago-granules—it will be noticed that the spermatozoa lie enclosed in these gelatinous masses and that they may for this mechanical reason alone appear quite immovable and rigid; where this is the case one must not immediately allow oneself to be misled into assum-

ing a real rigidity and an absence of vitality and generativeness.

Inflammations.—Whether inflammations of the vesiculæ seminales as such have anything to do with the fruitfulness of the semen is not quite certain. It is quite possible to imagine *prima facie* that even if these receptacles discharge a purulent secretion or are even closed and destroyed, a serviceable semen can still issue direct from the epididymis, vas deferens and prostate. Nevertheless, inflammations of the vesiculæ seminales must in this respect also be regarded as something suspicious; the addition of the inflammation-product and of blood to the spermatozoa seems above everything else to act detrimentally. With regard to pus this is established beyond doubt (*Lohnstein* and others). The presence of blood in the spermatic fluid (*hæmospermia*) is in spermatocystitis especially something exceedingly common. This symptom is almost regarded as a criterion in the differential diagnosis from prostatitis. Still we must not forget that sanguineous semen can occur without real inflammation as well. In some men it appears exclusively as a result of congestions, and an admixture with blood is seen sometimes especially after sexual excesses. The phenomenon causes to the patients extreme alarm, but it disappears as a rule after a short time with rest and the necessary care. In newly-married people especially such an occurrence is by no means rare, but the prognosis is, as long as there are no other signs of local disease, a favourable one. A careful local examination is, of course, a necessity; and one should never omit in these cases a thorough exploration per rectum as well as an examination of the expressed secretion or of the urine evacuated after the expression. Where there are signs pointing to an inflammation (tumour, pain, pus-cells in the secretion)—the case is more serious. Acute spermatocystitis requires rest in bed, a strict diet, morphia as a sedative for the painful spasms, the internal administration of balsams, aperients and complete continence. In chronic cases the treatment is similar to that of chronic prostatitis, and particularly massage as well as *Arzberger's* cooling of the rectum or an instillation of nitrate of silver may well be tried. As both diseases are almost without

exception of a gonorrhœic origin it is, of course, necessary to be on the lookout for possible gonococci. Even if the latter are not found it is nevertheless advisable in the case of a chronic spermato cystitis, which is sometimes the only and hardly curable residue of a gonorrhœa, to refuse the consent to a marriage partly on account of the danger of infection and partly because of the possibility of the marriage proving sterile.

Calculi.—A not very rare occurrence is the formation of calculi in one of the vesiculæ seminales; a quite characteristic symptom calls attention to their existence, namely an extraordinarily severe pain in the perineum and in the anus during ejaculation. The contracting vesicula seminalis presses tightly around the calculus. The pain is similar to that in stone of the bladder when during the evacuation of urine the last contractions of the bladder press the stone against the sensitive urethro-vesical orifice. Where such complaints are made it is necessary to think of this disease which, of course, requires operative treatment.

Carcinoma.—Cancer of the vesiculæ seminales hardly arises as a subject for consideration in connection with the subject of marriage, as it is, probably without exception, a part-symptom of carcinoma in other parts of the uro-genital apparatus.

Tuberculosis.—Of more importance is tuberculosis, not on its own account but because of the transmissibility, hereditary or otherwise, which we have to consider in this connection. It is apparently just from the secretion of the vesiculæ seminales that bacilli become mixed with the ejaculated semen most often. We cannot enter here again into the discussion whether an infection of the ovum and consequently a congenital tuberculosis can arise in this way, for my part I cannot regard this mode of origin as at all probable. Nor is it by any means established with certainty whether a maternal infection can arise through the direct introduction of bacilli into the female generative organs, but as this possibility has at all events been proved by experiments on animals, we must draw from this the practical precautionary conclusion that patients of this class must be prohibited from practising sexual intercourse. This prohibition is

moreover justified by the fact that the inflammation accompanying the tuberculosis is unfavourably influenced by sexual irritation and ejaculation.

Emissions: spermatorrhoea.—All the pathological conditions considered so far pale, however, in importance when compared with the disturbances in the ejaculation or in the flow of the semen which rest partly on nervous and partly on inflammatory causes. There is probably no doubt that the ejaculatory act is influenced to a considerable extent by the state of plenitude of the vesiculæ seminales. This process becomes perfectly intelligible if we examine into the conditions associated with normal nocturnal emissions. The expansion of the vesiculæ seminales acts in the absence of an inhibitory voluntary influence, reflexly on the central nervous system; the latter responds to the excitation on the one hand by giving rise in the region of the sensorium to dream-like pictures of an erotic character derived from the imagination or the store of memory, and on the other by producing vaso-motor and motor impulses which lead to erection as well as to contractions in the musculature of the vesiculæ seminales themselves and in the ejaculatory accessory muscles, the ischio-cavernous and bulbo-cavernosus. In masturbation and voluntary coitus this sequence is less apparent; here the primary irritative tension is sometimes absent, and the need arises for sensory excitations exclusively which are in the case of masturbation products of the imagination and in ordinary coitus the impressions of the senses of vision, touch and, perhaps, smell. In both these cases the excitation is, besides, increased by the tactile irritation of the sexual organs themselves. Ejaculation may therefore occur though the vesiculæ seminales are almost empty, and the fluid need not then even contain any more spermatozoa. On the other hand we must not forget that in the waking condition, too, the sexual desire may be irritated into action by the tension of the vesiculæ seminales, especially if we look upon that desire, according to *Moll's* classification, as a desire for detumescence.

These remarks lead to two definite conclusions. First, that under normal circumstances, or better said during rest, the closure of the vesiculæ seminales is complete and that a special

cause is always required to bring about their opening and to allow their contents to pass out; and secondly, that under ordinary regular conditions it is only certain definite and absolutely special excitations which can give rise to this opening process.

Deviations from the normal also occur therefore in two separate directions: either the closure is insufficient and a discharge takes place under conditions which in a healthy man are inoperative, or the contractions of the vesiculæ seminales are produced by nervous excitations which in a healthy man are equally unable to give rise to this result. The ultimate effect, namely a discharge of contents from the vesiculæ seminales is, of course, in both cases alike, except that in the first a more continuous flow takes place which is quite independent of matters sexual, while in the second ejaculations are produced in a manner and of a kind like those in the normal sexual act, but by inadequate excitations. Both these processes are frequently spoken of under the collective name of *spermatorrhœa*; it were better to restrict this designation to the first category and to include the second among the pathological emissions, or the premature ejaculations, and so on. Only in very advanced final stages can the latter condition eventually pass into the first, and lead to a continual discharge of semen.

If I have said above that normally the ejaculatory ducts are firmly closed and that they oppose the passage of the vesiculæ contents this must not, of course, be understood literally. Even in healthy men this closure can be overcome by mechanical means; as already mentioned strong pressure on the vesiculæ seminales brings to light almost regularly some of their contents, either in the form of a secretion oozing out from the urethra or mixed with the urine. For the rest the above statement remains available, and we must therefore regard it as something pathological if an examination of the urine reveals the presence of seminal constituents, provided, of course, that this is not due to premeditated rectal pressure or to a preceding emission or coitus. Such constituents of seminal fluid are most frequently demonstrable in the urinary filaments which remain behind after *gonorrhœa*. *Fürbringer* especially

has pointed out with the necessary emphasis that spermatozoa may be found in an enormously large number of cases of chronic urethritis. This is certainly not sufficient for diagnosing immediately a spermato cystitis, but at any rate an insufficiency of the ejaculatory ducts. Beginning with this first and mildest degree the affection increases gradually; in extreme cases the urine contains well-marked lumps of spermatic constituents; more rarely the latter issue in the form of a secretion through the urethral opening, and oftenest during pressure at stool or after micturition; in exceptional cases this takes place in the shape of a constant flow (spermatorrhœa in the narrowest sense) a process which denotes already paralysis of the compressor urethræ muscle. With the diagnosis of just these latter cases one must be particularly careful; it still happens that the clear stringy secretion of *Littre's* glands which comes out easily during erection is mistaken for genuine semen!

The cause of most of the cases of this description is in my opinion to be found in gonorrhœa. It is generally a question of inflammatory changes in the ejaculatory ducts, a fact which is demonstrable by the simultaneous occurrence of pus-corpuscles and bacteria. Primary nervous paralyses of the ducts are far more rare, they are met with most frequently in affections of the central nervous system, f. i. tabes, but such conditions of weakness often remain behind also after a complete disappearance of the inflammation; the history reveals then as a rule a preceding gonorrhœa. That such a weak state of the ducts can ensue in association with sexual self-abuse, especially after long continued masturbation, is not at all doubtful; I believe, however, that the number of cases of this class is far smaller than that of the first-mentioned. I have often been under the impression that the sexual abuse has been so to speak dinned into the patients frightened by the phenomenon till they have come to believe in it themselves. The connection with neurasthenia is also very likely in the majority of cases the other way about, that is to say, patients who are troubled with spermatorrhœa, or who imagine that they suffer from it, and those finally in whom it has been wrongly diagnosed by their doctors, become easily neurasthenic.

We see from this that not all cases of "spermatorrhœa" must be taken too seriously. Patients become alarmed by the bugbear of a threatened impotence as soon as they hear something about their condition, but it is possible in this respect to re-assure them in all conscience so long as they are in the initial stages of the complaint. The cases of purely inflammatory insufficiency of the ducts should be first regarded as a merely local disease and treated accordingly; it is here where local therapy, consisting of dilatation with bougies, mild or even strong cauterisations in combination with massage per rectum, shows most excellent results. *I even consider, so long as there is no danger of infection threatening, sexual continence as by no means absolutely necessary.* Candidates for marriage must naturally be recommended to postpone the event until all the inflammatory symptoms have disappeared, but where repeated examinations confirm the latter occurrence, if the urine or the secretion contains yet after defæcation or pressure only a few solitary spermatozoa I regard the complete prohibition of coitus as no longer justified. If the phenomena are more strongly developed, it stands to reason that the organs need rest and care; in the purely nervous forms especially sexual diet is an indispensable necessity. All other measures must be taken at the same time with a view to strengthening the affected organs; of local remedies I have derived most beneficial results from catheterisation with thick *Béniqué*-sounds, from the application of *Winternitz's* psychophor and *Arzberger's* rectal cooler, from massage, cold sitz-baths, with or without the addition of brine, whereas I cannot on the other hand say that I have been equally successful with the warmly-recommended faradisation through the rectum or the urethra. As to the extreme cases of continuous flow of the semen, they are decidedly an absolute contra-indication against marriage or the exercise of sexual intercourse, seeing that they are as a rule intimately associated with other disturbances in the innervation which affect not only the ejaculatory act but also that of erection.

At the commencement of the other series of development stand, as already stated, the excessive emissions. The line

of demarcation is difficult to determine; in a healthy normal man the occurrence of pollutions fluctuates exceedingly and is not bound to any settled rule, as it depends not only upon the physiological condition of the organs themselves, but also on the mode of life, diet and mental occupation with sexual affairs particularly. It is consequently impossible to lay down a definite statement as to the normal frequency of emissions at the different respective ages; some men hardly ever have any, while others, though otherwise perfectly healthy are plagued by them very frequently. The criterion of abnormality has already many years since been laid down by *Curschmann*; in healthy people the emission does not leave behind any abnormal sensations whatever, whereas those who feel afterwards exhausted and weak must be regarded as diseased. We must admit in the case of the latter a disproportion between excitation and effect; an irritation which remains ineffective in a healthy man, produces in them results which under normal circumstances do not arise, and this is a sign of weakness, of a hyper-excitability of the central nervous organs. This disproportion can keep increasing as time goes on. At the beginning erotic dreams occur in this connection, but later on they disappear; first the ejaculations take place during sleep only in the natural absence of the voluntary inhibition, afterwards they are caused during the waking state as well, by the slightest imagination of an erotic character, and finally by the mere sight of a female person and even through looking at or touching objects used by women, and the like. Sometimes ejaculations will be produced by mental impressions which a normal man can, often with great difficulty only, connect in any way with erotic excitations, or which are more likely to cause in a normal man just the opposite kind of feelings, such as disgust and nausea. Eventually the psychical element may disappear altogether, and purely mechanical irritations, such as the commotion caused by riding or driving, may have exactly the same effect. In such a case the ejaculation-centre is the only one exercising any activity, while the erection generally associated in the process becomes entirely eliminated. In the very last stages the real ejaculation itself apparently ceases altogether, and the affection

assumes the character of a proper spermatorrhœa. Here also the boundary-line is not a fixed one, and the transitions are numerous. Where the erotic irritations are uncommonly strong the motor reflex often overcomes the will-power-inhibition even in perfectly healthy men; thus f. i. one often hears young husbands complain that the ejaculation takes place before they have properly begun the sexual act; engaged young men are also often in their anxiety compelled to seek medical advice because during somewhat impetuous caresses which are not at all intended to lead to real coitus, the otherwise controlled ejaculatory-centres are no longer under the influence of their will-power.

At any rate we see that the nervous-psychical factor plays here the most important part, a circumstance which we must bear in mind above everything else in judging or when attempting to treat all these cases.

The mild forms are to be regarded as prognostically favourable, so long as there is no central causal malady at work. The irritable weakness which lies at the root of the frequent and exhausting nocturnal emissions and also at that of the premature and involuntary ejaculation can as a rule be influenced beneficially. In the former cases a suitable physical and mental regimen, especially inurement, sport, abstinence from alcohol, hydro-therapy, mountain-climbing, sea-bathing, the avoidance of obscene literature and exciting plays, etc., are sufficient to bring about an improvement in the whole condition. Nor is it necessary on principle to dissuade such individuals from getting married, provided there is no doubt about the diagnosis; one frequently observes that men who have "suffered" much from emissions remain permanently free from the complaint once they have entered upon the regular sexual intercourse of married life. The premature ejaculation in young married men I also regard as something common and I do not even consider that any special treatment is necessary, unless it be a psycho-therapeutic one consisting of re-assurances to the patient that he will get over the trouble in the course of time. As a rule the condition improves spontaneously; the prolonged habituation dulls sometimes the originally exaggerated sexual

excitement, and the reaction becomes less and slower. In very excitable and withal feeble-willed individuals an hygienic-dietetic treatment in the above sense is eventually indicated; in such a case a temporary separation from the wife should be insisted upon. Sometimes it may also be necessary to warn that the sexual act must be performed under as normal conditions as possible, and that no artificial exciting means whatever should previously be employed!

As considerably more serious I regard those cases in which emissions take place during married life and notwithstanding regular sexual intercourse. I always consider this a sign of high sexual irritability and weakness. The patients are apt to draw the conclusion that the occurrence of the pollutions is due to the fact that they do not perform the sexual act as often as their nature requires, and they accordingly increase their activity in that direction whereas they ought to do exactly the opposite. The correct thing is to spare the frequently irritated nerve-tracts (which respond already to slight forms of excitation) as much as possible. Sexual intercourse must therefore be restricted and a reasonable regular mode of life instituted so as to check the usually somewhat uniformly developed erotic tendency of these men.

The worst outlook is presented by those cases in which the ejaculation is produced by totally inadequate excitations, and here the prognosis gradually becomes more and more unfavourable in the manner described above. To some extent these phenomena fall in the domain of psychiatry, but unfortunately they are very little amenable to psychiatric influences. Partly they interest the physician too, as they are only too often accompanied by a general and severe bodily decay. They develop very rarely during married life, at least when the latter goes on under the ordinary normal circumstances, but are observed as a rule in *bon-vivants* of the worst description, individuals who having become, by habitual and prolonged over-indulgences of all sorts, sexually blunted to normal erotic influences, take refuge to constantly changing means of excitement until the whole of their nervous system, especially its sexual sphere, finally becomes completely shattered. Masturbators, in par-

ticular, whose sexual abuse is a practice so easily accomplished, form a large portion of this class of patients. It requires an absolute want of conscientiousness to recommend to such people marriage as a remedy for their condition. Quite apart from the psychical depravation which one encounters here almost constantly and which is bound to lead in the case of marriage to most revolting and unendurable consequences for the wife, we must not forget that physical impotence generally makes its appearance very soon; a paralysis of the erection-centres takes place finally in almost every instance and the performance of normal sexual intercourse becomes to these patients impossible in spite of their recourse to abnormal imaginary pictures.

I have not so far mentioned in connection with the treatment of these cases, local therapy, whereas formerly much benefit was expected just from this method, chiefly because of the influence exerted by the sensational as well as exaggerated descriptions of *Lallemand*. One still hears the suggestion advocated now and then that in all these cases of abnormal irritability, that is in excessive nocturnal emissions, in premature ejaculation, and still more in emissions while in a waking condition, an energetic cauterisation of the posterior urethra should be undertaken as soon as conveniently possible.—The lunar caustic was for a long time regarded as the real sovereign remedy for the radical repression of the abnormal sexual irritability. I am in this respect entirely at one with *Fürbringer*, *Finger* and others whose attitude can be summed up in the words: "No local treatment without local disease!" In contrast to the cases of real spermatorrhœa which we discussed first we have here always to deal with nervous processes: there is no inflammation, no relaxation of the organs to be combated, but purely their abnormal irritability. There might be, at the outside, a certain amount of hyperæmia present, as to which it may also be a doubtful matter whether it is the primary element or rather the consequence of an exaggerated activity of the gland and of its ducts, and it might therefore be advisable to recommend here also mild hydriatic applications such as *Arzberger's* method, the psychophor, cold sitz-baths, cold irrigations and affusions.

I must, however, generally speaking, warn against the employment of real local treatment; the irritation produced by it causes as a rule the opposite effect to that which is desired. The medical man for instance who would be tempted to treat a candidate for marriage suffering from frequent and weakening emissions and who is afraid of losing his virility by cauterising with nitrate of silver the prostatic portion of the urethra, would only aggravate the evil, as pain and inflammation would thereby be caused and the treatment would in this way be productive of an increase in the sexually neurasthenic symptoms.

Aspermatism.—We must mention briefly yet another rare and characteristic affection of the vesiculæ seminales; occasionally such extreme contractions of the ejaculatory duct occur that the semen cannot be forced through it by the ejaculatory movements. The sexual act is thus not accomplished in the normal manner, but leads rather to extreme exhaustion. It is only much later, when the penis has regained its lax condition that the spasm ceases and the semen begins to flow out. We have always in these cases to deal with patients with pronounced neurasthenia; as to the treatment of the affection which is, by the way, only very exceptionally met with in married men, it must be carried out somewhat according to the principles laid down above.

3. *Diseases of the prostate. Disturbances in the constitution of the semen.*

Function of the prostate.—The functions of the prostate have through recent investigations, and especially through Fürbringer's careful observations been cleared up to such an extent that there can hardly be said to be any longer a doubt as to the participation of this organ in the generative act. The probability is, however, that this does not constitute its sole function. It has also a mechanical duty to perform in the closure of the bladder, and an internal secretion on its part cannot altogether be looked upon as a mythical impossibility. The main thing nevertheless is that it produces a juice

which forming quantitatively a very material constituent part of the spermatic fluid must manifestly influence greatly its quality as well. It is only by the addition of this juice that the semen obtains the necessary consistence; the spermatozoa which, while in the vesiculæ seminales were embedded in thick masses of gelatinous substance, become liberated from this durance and receive the requisite space for their life and movements; it is also highly probable that a chemical reaction also sets in which although unknown to us in all its details alters the "latent" life of the spermatozoa into a manifest one. The connection between the sexual organs proper, that is the testicles, and the prostate, is so intimate that they both commence their activity simultaneously during puberty, and an early removal of the testicles (castration) in animals and men prevents the further development of the prostate or causes it to shrink—a circumstance which has even been utilised as the basis of a method for treating hypertrophy of the prostate, a subject to which we shall return later.

From all this we see that the diseases of the prostate possess in relation to the question of matrimony and especially with regard to the fruitfulness of a marriage a highly eminent importance. This organ ought to receive more attention even than it has hitherto done as one of the principal centres of disease in the whole body, and its constitution and functional capacity should be investigated in every doubtful case.

Prostatitis.—The acute infection of the prostate hardly requires any consideration from our present point of view. With very rare exceptions it arises in consequence of an invasion of gonococci and constitutes an accompanying symptom of gonorrhœa. It is worth mentioning here solely because swellings and even suppurations of the prostate occur sometimes with surprising suddenness in married men and at periods when the gonorrhœa has long since appeared to be cured. Such an event gives rise to a suspicion that the disease is not yet at an end and is naturally, if the suspicion receives confirmation, of great influence in determining the method of treatment.

Of far greater importance, however, is the part played by

chronic inflammations of the gland. I will only recall briefly that this inflammation can take place in two ways: as a superficial catarrh of the ducts and as a more parenchymatous inflammation of the interior of the gland. These two forms which cannot always be sharply distinguished from one another have so much in common that we may well consider them under one head.

The main question is, of course, whether there are any gonococci present in the prostatic secretion. This must in the first place be investigated again and again. It is true that the microscopical examination of stained specimens is not always easy, and I recommend for this purpose the osmium-fumigation introduced by me. I have no doubt that by far the greater majority of all the cases of matrimonial infection are due to diseases of the prostate. If, where a wife is suspected of being infected with gonorrhœa, we examine the husband, it is only very rarely that we yet detect the trace of a fluid urethral discharge; we are also assured by most husbands, whose conscience is in this respect somewhat troubled, that they have always followed the medical instruction to irrigate the urethra by emptying the bladder shortly before each coitus, so as to wash out what secretion there might be in the urethral canal. It is only by examining the prostate and its secretion that we become enlightened as to the real seat of the infection, and even if we do not actually succeed in demonstrating gonococci we may well and justifiably entertain a suspicion of their presence from the presence of abundant pus-corpuscles. It is obvious that the infection takes place in these cases through the medium of the ejaculated semen, and it stands to reason that the above precautions are under the circumstances perfectly useless.

I am, however, of the opinion that non-gonorrhœic chronic prostatitis or prostatitis which is no longer gonorrhœic, can also be a source of danger in this respect. If there are any bacteria at all,—and it is the bacillus coli which frequently inhabits the prostate and vesiculæ seminales that is likely to play here the principal part—the possibility of an infection of the female genitals by means of the sexual act is thereby created, and although it is a less serious affection than gonor-

rhœa it may nevertheless give rise to catarrhs and superficial inflammations.

But in addition to the effect on the genitals of the wife the inflammation of the prostate has a further significance for the sperm itself. We have mentioned above the well-known action of the prostatic secretion on the spermatozoa; they are in absolute need of a normal prostatic secretion to enable them to develop their activity. Wherever there is suppuration of the prostate worth mentioning it seems that this specific secretion is absent. If the juice of the gland is in these cases examined microscopically one finds almost exclusively pus-corpuscles suspended in it, but there are none of the other constituent elements present, especially the characteristic lecithin granules, which, however, re-appear as a rule under successful treatment. It cannot be said definitely that the lecithin represents exactly the specifically effective substance of the prostatic secretion, but a connection is at least very probable, and we are at any rate entitled to assume that a secretion which is destitute of it is inefficient. Perhaps the pus itself, especially where there are yet abundant micro-organisms, also contains toxins—which, too, act injuriously. I am less inclined to agree with the view, recently advocated by *Lohnstein* especially, that the reaction of the prostatic secretion has alone a great influence upon the vitality of the spermatozoa. Why, there is even no unanimity as to what that reaction is under normal circumstances! My own experience induces me to believe that it is always slightly alkaline, and this agrees as a rule with the observation that the spermatozoa thrive best in slightly alkaline media, whereas slight acidity, and, of course, also strong alkalinity, kills them. We must therefore pre-suppose very considerable suppuration, if we desire to attribute the lifelessness of the spermatozoa to this cause. As a matter of fact one finds in the expressed prostatic secretion the spermatozoa which it occasionally contains, sometimes rigid and sometimes vigorously mobile. In this connection we must not forget that the rigidity is often only an apparent one, as the spermatozoa are embedded in the gelatinous masses from the vesiculæ seminales. The secretion deserves at any rate to be carefully watched. We may look upon chronic

prostatitis as a cause of sterility which can happily in some cases be removed by appropriate treatment. Included in the latter are especially the methods of treatment by mechanical and thermal remedies (massage, the application of cooling or warming apparatuses) and by absorbing substances (iodine, ichthyol).

If the question of the consent to the marriage of a patient with chronic prostatitis arises, the two points discussed so far must, as we have seen, be cleared up first. That the presence of gonococci in the secretion renders marriage impossible for a time is quite evident, and the occurrence of numerous other pus-cocci equally calls for serious notice. We must also bear in mind that the object of marriage may be frustrated since severer forms of prostatitis are capable of causing sterility.

But if all this does not apply, if after careful investigation and observation we are led to believe that the wife does not run any risk of infection, and that the fruitfulness of the sperm is not impaired, the question arises: Is marriage advisable as far as the man himself is concerned or should he be warned against it?

It is necessary here to separate somewhat more sharply the two forms of chronic prostatitis mentioned above. They are distinguished, apart from all local manifestations, quite prominently by their influence upon the general health and especially upon the central nervous system. In the simple superficial catarrhal form there is very little observed of this influence. The patient may at the outside, if he has been subjected to too exacting or too prolonged treatment, develop gradually into a sexual neurasthenic. The reason is because the treatment is directed in many cases of the kind to a vain issue: it is not always possible to remove entirely all the local residues of the morbid process; on the contrary, one runs the risk of causing general injury along with very little local benefit. Where the diagnosis is certain,—a contingency requiring, it is true, not only accurate observations but also extensive experience and practice—the marriage is in my opinion not only permissible but actually advisable. All these patients suffer from a certain lack of confidence in themselves; they are eventually pursued by

the hypochondriac idea that their prostatic affection might render them permanently impotent. If they marry, or if permission is given them to get married, the whole of their anxiety disappears as if by a single stroke. It is also indisputable that it is just these cases in which regular sexual intercourse is followed, locally, too, by eminently favourable results. With the application of the necessary medical care we have here in my opinion a condition to deal with in which we are actually entitled to look upon marriage directly as a remedy worth recommending.

The matter is somewhat more complicated as regards the second group, comprising the cases of real chronic parenchymatous prostatitis. On principle marriage might be considered here also as by no means dangerous, so long as there is no infectious discharge. But we must not in this respect overlook that there exists on the one hand even under most careful treatment a distinctly pronounced tendency to relapses, and that on the other the majority of the patients manifest already more or less serious consequences in their nervous or psychical spheres; they may very well to a great extent be designated as hypochondriacs. It is true that by suitable local and general treatment we are as a rule enabled to relieve or even to remove these complaints simultaneously with the local symptoms, but the inclination to relapses just mentioned makes the prognosis of the affection decidedly worse. If such periods of relapse occur during the married state, periods in which the patient is not only plagued by a return of the discharge, by pain during micturition and by persistent constipation, but in which he suffers from general depression amounting sometimes to suicidal tendencies, —if all this occurs in married individuals, their married life may undergo most serious perturbations. But then here also it is as well not to forget that the more regular mode of life, and the more uniform sexual intercourse which accompanies the married state are capable of exerting on these patients also a favourable influence.

It would be desirable in such cases if at all possible not only to form a medical opinion as to the state of the patient as such, but also to gain a knowledge of the external conditions under

which the marriage would be concluded. Favourable circumstances might possibly have to be regarded as a motive for permitting marriage whereas threatening poverty, sorrow and domestic unhappiness would contra-indicate it as likely to cause an aggravation of the patient's nervous complaints.

Hypertrophy.—Materially different than in the affections discussed so far is the duty of the physician in the presence of that disease of the prostate which is generally—though not with perfect justification—designated as the hypertrophy of the prostate. This is not the place to enter into a detailed description of the anatomy and symptomatology of the condition; besides, we are here principally interested only in the first stage of the disease which is distinguished mainly by congestive phenomena. During this period which extends often over many years, there is in addition to the real urinary complaints (frequent or painful desire to pass urine) in many cases also an unmistakable increase in the sexual desire which is at all events in striking contrast with the generally more advanced age of the patients. The latter experience a strong irritation, are often troubled by nocturnal erections, and they have a sensation that coitus would bring them relief. Of course, they are mistaken in this as a rule; there arises on the contrary a high degree of exhaustion in association with these excesses, and the urinary difficulties are in consequence rather increased. I am of the opinion that in all cases where somewhat older men manifest an increased sexual desire, the prostate should be examined even if there are no special symptoms calling attention to that organ. If it is found to be enlarged the performance of sexual intercourse and especially excess in that direction must be decidedly warned against. The congestion in the pelvic organs associated with the sexual act is undoubtedly injurious to the diseased gland. Attempts must be made to appease the sexual desire in other ways; luke warm sitz-baths, aperients, cold irrigations are useful remedies; but, if necessary, one should not hesitate to administer in these cases anaphrodisiacs, at least for a time: potassium bromide and also heroin are of very great service. Of course, everything which can excite the senses must at the same time be avoided; not only a physical but also a psychical

diet must in this respect be strictly enjoined! In the later stages of the disease the sexual desire usually diminishes and becomes extinct; nevertheless it is still observed sometimes in very old and decrepit patients. We must at all events think of its existence in every case, and we have herein a most serious objection against the treatment of hypertrophy of the prostate by means of castration, which was warmly advocated for a long time without any opposition. It does not need much persuasion to obtain the consent of the patient to the operation, desperate and tired as he is of constant catheterisation, and if the removal of the testicles is succeeded by the desired result he soon gets over the loss of his remnant of virility. But if, as it unfortunately too often happens the castration brings no relief, the situation becomes considerably aggravated. The mutilation for which no equivalent has been received is then taken very much to heart; and it may lead to deep melancholia or even to attempts at suicide. For this reason all sorts of attempts have been made with a view to leaving the patients under the impression that their virility is not entirely gone; the castration has been limited to one side only, ivory balls have been introduced into the scrotum in the place of the testicles, or the vasa deferentia have been excised so as to destroy the function of the testicles but not the testicles themselves;—all these measures have however proved futile, and on this account principally, sexual operations have gradually been eliminated from among the therapeutic attempts directed against the hypertrophy of the prostate.

Atrophy.—Atrophy of the prostate is seen somewhat more rarely in old people than hypertrophy. This affection does not possess any special symptoms of a sexual nature. It is only the consequential result, that is, the absence of the prostatic juice in the constitution of the semen which we have here to take into consideration. There is probably no doubt that an impotentia generandi is the outcome of these cases.

Tuberculosis ; carcinoma.—With regard to a few other diseases of the prostate (tuberculosis, carcinoma) I may refer the reader to what I have said above. Concretions occur, as is well known, in various forms; the smallest of them, which

have the shape of snuff-boxes, have not much to do either with the virility or the preparation of semen; larger stones can, however, obstruct the passage of the prostatic secretion on the one hand, and give rise on the other to pain during defæcation and micturition as well as during the ejaculation of the semen.

4. *Diseases of the urethra. Disturbances in the emission of the semen.*

The diseases of the urethra requiring consideration from the point of view of marriage and the married state are so pre-eminently of a gonorrhoeic nature that there remains but very little to say about them on this occasion. Some of the congenital malformations, again, are discussed in another place in connection with diseases of the penis, particularly so the most important ones, épispadias and hypospadias.

Congenital stricture.—We may here call attention to the congenital stenoses of the urethra which occur not infrequently at the urethra orifice especially. If they are only slight, they have no effect worth mentioning on the discharge of the semen; it is only in extreme cases that they can arrest the latter almost completely. The ejaculation takes place with pain, and the semen is not shot out. This may constitute an obstacle to impregnation, and it becomes then unavoidable to perform the usually harmless operation of meatotomy. More rare are the congenital strictures of the deeper parts of the urethra; their treatment does not differ materially from that of the acquired constriction with which we shall deal later on, unless there are also other anomalies present at the same time, as for instance, atrophy of the penis and of the corpora cavernosa.

Urethrorrhoea.—A frequent cause of great anxiety is formed by a condition which must be regarded mainly as an abnormal secretion and which is characterised by a discharge from the urethral orifice (especially during erection) of a thin rubber-like viscid fluid. It occurs oftenest in connection with frequently repeated sexual excitement which is not succeeded by coitus, thus f. i., in young men engaged to be married. The individuals in question believe then that they suffer from some

inflammation or other, possibly from a recrudescence of a former gonorrhœa, or else they think they are troubled with spermatorrhœa; at any rate they are very much alarmed by the occurrence. The appearance of the secretion alone is sufficient to give an idea of its harmlessness, microscopical examination confirms the favourable view by showing nothing more than mucus-like threads covered with a few epithelium cells. The phenomenon is nothing else but a profuse secretion of the urethral glands, a so-called urethrorrhœa (*Fürbringer*); it is perfectly clear that there is no occasion to dissuade from marriage on that account.

Inflammation.—The real inflammations of the urethra are as already said mainly of a gonorrhœal nature. But there exists nevertheless a pseudo-gonorrhœa, that is, an infection with some sort of a suppuration-causing coccus or bacterium, belonging usually to the bacterium coli group. In the majority of cases these inflammations run quite an acute course; in fact they often heal spontaneously without any treatment. Sometimes, it is true, the process is less harmless and the symptoms may continue for a long time. In such a case I believe the affection to be due as a rule to a real contagion during coitus. If we admit this to be so, the conclusion follows as a matter of course, that these forms of urethritis though harmless in themselves must also be regarded as infectious, and that as long as they continue marriage must be prohibited. Even if their consequential results are less serious than those of gonorrhœa proper, it is yet probable that they can give rise at least to inflammations of the vagina, to leucorrhœa, and similar conditions. Let me observe in this connection that according to some authors genuine urethritis is not infrequently seen in association with masturbation.

Stricture.—To a considerably greater extent we are here interested in the real urethral strictures which though caused in the majority of cases by gonorrhœa may also be of traumatic origin, or, as already mentioned, congenital. One of the earliest symptoms of stricture relates to the sexual functions; in slight degrees already it causes pain during the passage of the semen, and as years often elapse between the conclusion of a

gonorrhœa and the formation of cicatricial constrictions this complaint is just one of those which are frequently met with in married men. This pain is clearly distinguishable from that mentioned above in connection with calculi in the vesiculæ seminales both by localisation and the time of its occurrence. It is not altogether pathognomic, as the same complaint of "painful delight" is heard sometimes also from neurasthenics and from people suffering from congestion of the pelvic organs. It is, however, advisable to examine the urethra in every such case with the bulbous sound or the endoscope and to look for eventual cicatricial contractions. In severer forms the clinical picture, apart from the urinary complaints, becomes still more characteristic; especially the seminal emission suffers more and more, until in the case of very narrow strictures it finally amounts to complete "aspermatisms," and the semen, instead of passing out of the urethra, flows backwards towards the bladder. This explains the enormous importance of strictures to the married state. Though the symptoms last mentioned do not occur very often, it is not possible when a stricture begins to form, to tell what its further course will be. If it is only for reasons of sexual capacity—though there be no others—we must endeavour to cause the disappearance of the cicatricial tissues as soon as possible. Generally speaking, the ordinary treatment by bougies suffices to remove strictures recognised soon enough, but great importance must be attached, in married men especially, to the point that the dilatation must reach really high degrees (by using eventually *Oberländer's* dilators) and that the patients present themselves at regular intervals for the purpose of control-examination. Unfortunately, judging from my experiences, married men neglect as a rule this salutary precaution of having themselves examined periodically, because the treatment is to them unpleasant or the visits to the doctor on account of such an affection rather uncongenial, and the result is that one often sees particularly in such married individuals suddenly-occurring and very serious aggravations of a neglected stricture. Sometimes one is compelled to adopt rather more stringent therapeutic measures just because a marriage may be contemplated. I recollect the case of a young man who sud-

denly made up his mind three days before the date of his wedding to have himself examined on account of his extreme difficulty in passing water. The doctor ascertained the presence of a stricture impermeable to even the finest sounds. I succeeded only with very great difficulty in passing the constricted spot and followed this up immediately by a dilatation according to *Fort's* method. In this way I managed to obtain in two days a dilatation up to No. 15 (French size). It is well known that traumatic strictures necessitate nearly always operative measures, into the details of which I need not enter here. Apart from the deterioration of the sexual activity the consequential results of severe strictures, such as the dribbling of urine, eventually the periurethral infiltrations, the formation of fistulæ, etc., are of so repellent a nature that this alone is capable of seriously disturbing the happiness of the married life. I may, perhaps, recall here that repeated observations seem to show that retro-strictural urethral fistulæ predispose to the development of cancer!

In women urethral strictures are notoriously rare and not directly connected with the sexual functions. Occasionally, however, we come across a peculiar condition known as "elephantiasis urethræ," which is probably sometimes a result of gonorrhœa and in which the entire urethra is surrounded by a rigidly infiltrated tissue; the lower wall especially seems very much thickened and, what is particularly noteworthy, is exceedingly painful on being touched or when irritated during the sexual act. The condition which is very troublesome on account also of the urinary difficulties, seeing that retention of urine may result directly from the thickness of the rigid walls, can be removed entirely by operation only. Interference with the sexual act may also be occasioned by a few other affections of the female urethra, especially the prolapse of the urethra and the fairly frequent so-called carunculæ which also require operative treatment.

Foreign bodies.—An interesting chapter in the study of sexual life is furnished by the subject of foreign bodies in the urethra. The introduction of such articles is notoriously on the whole a masturbatory act; the patients maintain as a rule

that they have recourse to the manipulation in order to relieve their urinary complaints, but these statements should always be received with suspicion as the procedure is in nearly every case dictated by sexual excitation rather than anything else. The act is therefore committed during puberty more than at any other time of life. Boys, and perhaps more frequently girls, introduce all sorts of objects—pencils, straws, rubber-pipes, hair-pins, etc.—sometimes with such dexterity, that one is surprised how such things could have passed in at all. (I once found, for instance, in the bladder of a young man a soft india-rubber tube 56 cm. long.) More important to our present subject are those cases where such “tricks” are played by adults and not by unripe youthful individuals. In a few instances of this kind I was able to prove that they undoubtedly rested on sexual perversity. From one gentleman I learned that, while in a state of drunkenness, he had had a needle introduced into his urethra by a prostitute. (Similar cases are recorded in literature.) This was obviously a case of sadism on the part of the woman; at other times when the procedure was carried out at the direct request of the gentleman in question we must suppose that he was actuated by a tendency to masochism (a sensation of delight through experiencing pain). Such things occur also from homosexual motives. (There is, f. i., the case of the students who introduced into the urethra of a drunken itinerant musician a thick piece of rubber-pipe.) Quite apart from the severe local manifestations which the foreign bodies are capable of causing (injuries, hæmorrhage, inflammation, calculi), the duty devolves upon the medical man of examining in every such case carefully into the sexual life of the individual in question. Even a form of masturbation alone, which has recourse to such means of gratification is suspicious; this is still more the case with the above-mentioned sadistic and masochistic acts. Where their presence is established those considerations will arise which are enlarged upon in another chapter of this work dealing with the subject of sexual perversion and psychical impotence.

Neuroses.—Let us finally mention briefly the occurrence of genuine neuroses of the urethra, especially of the prostatic

part, in which all sorts of complaints are made, such as are heard in connection with inflammatory affections or strictures. Since the improvement in our methods of examination this group has somewhat lost in importance; in very many cases of apparently purely nervous disease it is possible to detect their anatomical basis. Nevertheless, there remain a number of cases in which sexual irritation or sexual weakness also plays a certain part. Their conception and treatment coincide with those laid down with regard to sexual neurasthenia in other parts of this work.

5. *Diseases of the penis. Disturbances of the erection.*

Anomalies.—Among the diseases of the penis which are of importance in connection with the subject of marriage the congenital affections which refer to disturbances of development and formation claim our attention first. Mention ought also to be made here of that abnormality which occurs in the form of a very rudimentary development of the member, suggesting in the majority of cases its total absence, and which being associated with other defects of a high degree as f. i., the patency of the rhaphe, cryptorchism, etc., creates an outward impression of female habit of body. The question of marriage requires here consideration only if this female habit is so very strongly marked that a mistake exists on the point of sex. I have already called attention to these rare cases when discussing the abnormalities of the testicles.

More frequent and of greater importance from our point of view are those malformations of which the principal characteristic is an abnormal opening of the urethra either on the under or on the dorsal surface of the penis: hypospadias and epispadias. The higher degrees of hypospadias coincide partly with the conditions just mentioned if they constitute only part-symptoms of a general arrest of development. Here we shall consider the slighter forms first in which the penis is on the whole developed and the rhaphe closed with the exception of the one defect in the urethra.

Hypospadias.—A slight indication of hypospadias, that is, an opening of the urethra at the under surface of the glans, while the normal meatus is replaced by a blind groove, is not at all rare. One frequently sees such conditions quite accidentally in people who have no idea that there is something abnormal about their penis. No difficulty whatever in the performance of sexual intercourse need be apprehended on this account; erection takes place in such individuals with full force, the ejaculation is in no way hindered and impregnation is quite possible.

But if the seat of the hypospadias lies in the penile portion of the urethra proper the conditions are much more serious. In the first place the whole organ is here almost always in a state of stuntedness; it is small and shows a torsion downwards which does not become quite corrected during erection either. In this way the conditions requisite for the exercise of coitus are only imperfectly fulfilled, the patients complain regularly that the inefficient rigidity of the member causes them the greatest difficulties. There is, moreover, the question of impregnation which requires here most careful attention; if the urethral opening is situated far backwards it may happen that the ejaculated semen is not intromitted into the vagina at all but that it flows out again immediately. Although the opinion formerly held in this respect that a shooting of the semen right into the os uteri is indispensable has now been abandoned and although it is generally assumed that owing to the self-propulsion of the spermatozoa and their long vitality in a suitable medium, impregnation is possible even under apparently unfavourable conditions, still the chances are very much diminished and it is necessary for the medical man consulted with regard to the question of marriage, to lay the necessary emphasis on this point.

In the still severer forms in which the abnormal urethral opening is situated in the pars scrotalis near the perineum, sexual intercourse is probably always impossible; the two obstacles just mentioned, deficient erectability of the penis and discharge of the semen in front of the vagina are here so pronounced that marriage must be considered as out of the question.

An attempt must naturally be made if at all practicable to

remove the malformations of this kind by surgical operations. One can generally obtain in this way a closure of the urethral groove and a replacement of the meatus at the point of the penis, so that at least the difficulties in micturition are obviated. But the influence of the operation on the virile power must not be overrated; the deficient corpus cavernosum cannot be restored and the erection must necessarily remain a limited one.

We must remember, moreover, that hypospadias belongs to the distinctly hereditary malformations (*Orith*); a point to which attention should at any rate be called in connection with an eventual consent to marriage, even in cases that are only of a slight nature.

Epispadias.—Epispadias influences as a rule the virility to even a greater extent than hypospadias; in this affection, too, the corpora cavernosa are generally atrophied, the curvature of the organ during erection is, however, directed upwards. Of still greater importance is the observation that this anomaly is very often accompanied by further arrests of development; especially the non-closure of the symphysis and ectopia of the bladder are comparatively often noticed as higher degrees of this abnormality. One would think that marriage under such circumstances can hardly be thought of; not only the absence of erection on the part of the puny organ, but the whole disagreeableness of the situation, including the constant flow of urine and its consequences, admits of any other conclusion. And yet such cases do happen; *Dabrowsky* reports one in which the husband in question after fruitless attempts to cover the deficiency with artificial plates, simply put on a woman's skirt and very long boots into which the urine was allowed to flow constantly. The results of operations in ectopia and epispadias have recently become rather better on the whole; but here also we can reckon more on a durable closure of the abnormal urethral and vesical openings than on the establishment of an efficient virility.

Largeness of penis.—If the cases representing these two anomalies are, comparatively speaking, of rare occurrence, doctors are far more often consulted on other points which in themselves are not of very great consequence. The supposed

congenital abnormal largeness or smallness of the penis has here to be taken into consideration. The former is comparatively seldom a cause of trouble, but it does happen that patients complain, occasionally at least, that the big size of their penis causes them during coitus extraordinary annoyances. The immission is accompanied by the greatest difficulties, pain to the wife, premature ejaculation, etc. It is to be remembered that in these cases the abnormal size is observed during erection only when the blood-spaces of the corpora cavernosa are greatly distended. In my opinion the condition is mostly acquired and not congenital, and one that has developed gradually through an habitual hyperæmia caused by too frequent performance of the sexual act. Thus the phenomenon is seen principally in masturbators; it also occurs in individuals who have frequently indulged in sexual intercourse, but have remained abstinent during the time they were engaged to be married. The whole affair has generally no very serious importance, but it plays in connection with marriage in so far a rôle of some sort as defloration and impregnation may on this account be delayed for a very long time. Vaginismus also may occasionally be caused through this circumstance, and the often repeated fruitless attempts at coitus have generally a most depressing effect upon the wife, and still more so on the husband. Eventually the matter takes, however, as a rule a spontaneous turn for the better; it is only rarely that relative narrowness or abnormal rigidity of the hymen compels recourse to operative measures. A recommendation to apply cool affusions to the penis and, for the rest, to practise patience and quietude as much as possible is all that one can generally do in such cases.

Smallness of penis.—The abnormal smallness of the penis is of still less significance but can in so far lead to conjugal troubles as it may account for the absence of sexual gratification in the wife.

Phimosis.—More considerable disturbances may be caused by the existence of a congenital phimosis. Frequently overlooked during childhood, its presence often makes itself felt at puberty in a most disagreeable way, as erections give rise to a pulling of the prepuce which causes not only pain but

strong sexual irritation that seeks relief in masturbation, thus often establishing the habit. Sometimes, again, the tension of the constricted foreskin during erection is so strong, and the pain so intense, that sexual irritation becomes instinctively diminished, until erection disappears finally altogether and real impotence ensues. It is advisable to pay attention to these things in children and, if the phimosis is at all severe, to insist upon early circumcision, an operation devoid of all danger. We must also not forget that phimosis can easily form the starting-point of a number of other disorders as well, *f. i.*, balanitis, preputial calculi, etc.; inflammation may eventually result in para-phimosis; and extreme phimosis may also produce aspermatism.

Para-urethral passages. Fistula of penis.—

Of other malformations in the neighbourhood of the urinary meatus or on the glans we have to mention the para-urethral passages. Their existence has in reality nothing to do with the virility or sexual intercourse; they are only worth considering, because such patients easily fall a prey to gonorrhœal infection of which they do not get rid even after the cure of the urethral gonorrhœa proper, so that a matrimonial infection may eventually proceed from them, an occurrence which is not exactly very rare. Almost the same may be said with regard to the abnormality designated as double urethra or congenital fistula of the penis. This is a condition which presents channels that traverse the whole length of the penis taking their origin in the region of the symphysis and opening as a rule close above the urethra. The genesis of this malformation is not quite clear. It is generally discovered only when the canals have become accidentally infected with gonorrhœa, when the treatment is attended with the greatest difficulties. I was obliged in one case to have recourse to excision, which, however, in its turn left a disagreeable consequence; the resulting scar proved to be a most serious obstacle to cohabitation as it dragged the penis too much upwards.

Injuries.—That injuries, blows, bites, contusions, etc., can cause most severe damage to the penis is well known. Apart from the profuse hæmorrhage which may result from them,

they are all accompanied by the danger that the easily yielding tissue of the corpora cavernosa will be replaced by scars which may render erection entirely or partially impossible or at least cause such pain as to constitute in this way an obstacle to cohabitation.

Fractures.—As a special form of injury we must mention the so-called fractures of the penis, in other words ruptures of the corpora cavernosa which occur mainly during erection, not infrequently in consequence of too eager and awkward coition-movements on the part of young husbands, especially if the intercourse is attempted in an unusual position. A violent pain sets in all of a sudden; the erection disappears almost in a moment; the penis appears swollen and suffused with a dark-blue discolouration. Strangely enough, the prognosis of these injuries is not a bad one, provided the urethra is not torn at the same time. With rest and cold applications the laceration heals up, the blood is absorbed and after a few days or weeks even the erective faculty is usually completely restored.

Amputation.—Amputations of the penis lead, of course, to distressingly painful results if the necessity arises to perform the operation during sexual maturity on account of wounds, ulcers, or tumours. The sexual desire is not diminished, the remaining stump gets erected, and married men have been known to make use of very small portions that were left behind, though intercourse so exercised is bound to be attended with very great discomfort.

Inflammation.—Inflammatory diseases in the structure of the penis are probably as a rule of a gonorrhoeic origin; they commence as peri-urethral suppurations and often extend, if not incised soon enough, to a most alarming degree over the erectile tissue. Their residues also form scars which prevent erection. Usually these abscesses are situated on the under-surface of the penis; and it is there where the scars form, giving to the organ when erected the characteristic "post-horn" shaped curvature, or *chorda venerea*. It is therefore of very great importance from the point of view of the subsequent faculty for coitus that peri-urethral suppurations should be subjected to early and careful treatment.

Induration.—We must differentiate from these scars the indurations known as plastic indurations or “plaques indurées,” which are seen on the dorsal surface of the penis and which generally begin near the root of the organ. We have to deal here with more or less marked ossifications which appear first in the septum intercavernosum. In severe cases this ossification may consist of a thick bony ridge extending the whole length of the dorsum of the penis. The etiology of these conditions which, it must be pointed out, have nothing to do either with gonorrhœa or syphilis, is in an extraordinary number of cases connected with diabetes and gout, although it is not as yet clear wherein the association consists. Many observers feel inclined to look for the cause in sexual abuse. These indurations inconvenience the patients during erection only, when they occasion pain and when they can also, as I have seen in one case, give rise to cohabitation-troubles. Treatment is not of much value; the condition does not yield in the least to absorbent remedies or baths (water, fango, mud), etc. Where it does yield, the probability is that there was a mistake in the diagnosis. One is tempted to try operative measures, although the resulting cicatrices cause here also serious disturbances. Still, there have been successful cases reported. (*Galewsky.*)

Carcinoma.—With regard to tumours, we are here interested principally in carcinoma, which attacks the penis comparatively rarely. It is clear that where the diagnosis is certain, operation is the only available remedy, hard as it is to decide upon this mutilation in sexually mature men, especially if they are married. If the consent to the operation cannot be obtained the marriage or sexual intercourse respectively must be strictly prohibited, not only for general hygienic reasons or for the protection of the diseased parts, but also because of the possibility that particles of carcinoma may be implanted in the female genitals. On the whole, I am rather sceptical on the point of the contagiousness of the disease, and am of the opinion, as stated elsewhere and also in a previous passage of this article, that most of the reported cases will not stand serious investigation. I cannot, for instance, see in the simultaneous occurrence of cancer of the penis in the husband and cancer of the

pinna in the right ear of the wife (case of *Berger*) more than an accidental coincidence. But as cases are reported now and then—f. i., the well-known case of *Czerny-Tross*—of cancer of the penis occurring simultaneously with cancer of the portio vaginalis, the possibility of contagion must at all events be borne in mind. One must therefore not only prohibit the husband from having intercourse with his wife if he suffers from penile cancer, but he must also be warned against such intercourse if the wife is affected with cancer of the cervix uteri!

Tuberculosis.—Tuberculosis occurs on the penis in the form of small tumours (which appear occasionally as cysts); if they ulcerate the danger of infection is of course very considerable. The same may be said with regard to lupus of the penis, a very rare affection.

Impotentia coeundi.—We have hitherto considered chiefly the mechanical obstacles to cohabitation in so far as they render erection difficult or impossible. We shall now turn our attention to another group of cases, practically, perhaps, of still greater importance, in which the organs themselves appear perfectly healthy, but in which erection, the indispensable preliminary of cohabitation is nevertheless absent; in general terms we should therefore say that in these cases the nervous impulse is either wanting or impaired and that they are manifestations of the so-called nervous impotentia coeundi. It is advisable to distinguish here two main groups according to whether there is a psychical element in the symptoms or not. In the former case the sexual desire as such is either absent or insufficiently pronounced; there is no normal sexual desire for woman. In this group are included all the forms of sexual perversion which are dealt with in another chapter of this work and with which we are not concerned here. In the cases forming this group it is not the intermediary nervous apparatus which is at fault, but the disorder lies in the central organ: as soon as the latter is acted upon by excitations which are adequate to it—though abnormal in themselves—the perfectly normal effect on the genital apparatus takes place. In the forms to be discussed on this occasion there is no congenital or acquired defect in the central organ, but it is the reflex effect of its irritation which is

absent. It is, of course, very difficult to eliminate here altogether the psychical factor; in just these cases psychical obstacles are often very prominent features. Nevertheless the fundamental difference is very evident; the individual who is really psychically impotent is insusceptible to every normal irritation by the opposite sex, whereas the nervous impotent does experience a normal sexual desire, but he cannot transform it into action at all or he can do so only under certain conditions. We can therefore speak of an absolute and a relative nervous impotence.

Impotence is physiological as a rule before the development of puberty and in old age. It is true that erections are often seen in children, but the question is, whether they are due to sexual excitement, or whether they are the result of mechanical irritation such as is produced by phimosis, eczema, or intestinal worms, etc. There are, at all events, precocious boys in whom a sexual desire becomes manifest long before the commencement of the sexual maturity, that is before the production of a spermatic fluid capable of causing impregnation, and that desire generally assumes the form of masturbation. This evil and its consequences interest us here in so far as the premature sexual abuse gives rise occasionally to a weakening of the genital apparatus, which diminishes considerably the subsequent virility. As a rule young men who are otherwise healthy get over the period of masturbation without any ill-results; the fear of the consequences is generally worse than the consequences themselves. Candidates for marriage very often present themselves before the doctor in great perturbation a few days before the wedding, when they are only too ready to confess their early transgressions; in the majority of cases it is possible to re-assure them fully with regard to their virility.

On the point of the extinction of the virile power in old age, it is equally impossible to lay down any generally applicable rules. Just as the spermatogenesis may in some old men go on up to a very advanced age, so the faculty of erection and consequently that of cohabitation may, at least apparently, remain unimpaired for a surprisingly long time. There is,

however, one circumstance which often shows itself in this connection and which plays an important part in other forms of nervous impotence as well. Erections frequently take place in old men, either through erotic imaginations or dreams, or even without these, generally in the morning, perhaps, under the influence of the full bladder; they conclude from this that they are perfectly potent, but when they wish to put this potency to the test they find to their disappointment that they have none. As already mentioned, I have frequently heard this complaint from men with enlarged prostates. This is a circumstance to be borne in mind in those not very rare cases where very old men, mostly widowers, contemplate marrying again, relying upon this apparently sufficient faculty of erection. Scepticism is here always justified; after marriage this false virility as a rule disappears very rapidly.

In individuals whose age falls within the period of sexual maturity proper, the conditions are also very variable. Here also we not infrequently come across relative impotence. This refers in some cases to candidates for marriage whom anxiety compels to consult their doctors; they have never felt quite confident about their virility, which they have never, perhaps, in their lives tested practically, and in order to satisfy themselves have made an attempt at coitus, but without success. If they are otherwise healthy individuals, and if homo-sexual proclivity can, above all, be excluded, it is permissible to assume that a psychical inhibition, caused by anxiety, worry, and, perhaps, also by the disgust at the mode of beginning, has prevented the occurrence of erection. One may conscientiously in a case like this re-assure the patient completely and promise him full success in his married life, provided the inhibitory illusions can be overcome. It also happens that married men who are otherwise sufficiently capable, come to their medical advisers with a confession that in their occasional lapses from conjugal fidelity their power of coitus fails them entirely; in their case, too, the inhibition is a purely psychical one, similar to that which *Goethe* has described with such accuracy in his "Diary."

More difficult to judge are those cases in which the patients

complain of a quite gradual extinction of their virility while retaining fully their sexual desire. Among these there also are, especially in young married men, favourable cases; they rest sometimes upon too great a demand on the sexual capability which is succeeded by a condition of fatigue. The spermatogenesis itself is present, though, perhaps, somewhat weaker; the sexual excitation is not extinct; the desire is rather more pronounced, but the erection-centre does not respond to the reflex irritations at all or only slightly. These conditions disappear rapidly, a short period of rest, if possible away from the wife, combined with the use of roborating baths, cold friction, dorsal affusions, etc., restores the vanishing virility soon enough, but it is imperative to warn against similar abuses in the future.

The prognosis is considerably worse where after prolonged excesses—a term, it is true which admits relatively of the widest individual interpretation—the virility diminishes slowly. These cases have no connection whatever with the production of semen that goes on as a rule quite undisturbed; they announce, however, their advent very often by phenomena of irritable weakness, premature ejaculation and repeated emissions; the psychical condition is in no wise affected; there is at first no absence of erotic desires, but they become impaired gradually through the constantly failing attempts at cohabitation. Naturally these cases do not occur as often in married men as in bachelors with a somewhat stormy past, but they become of special importance to the married state when such individuals whose virility is of a reduced order, contract matrimony, as is unfortunately very often the case. If such married men are examined more closely, it is generally discovered that they suffered from the symptoms already before they were married, and that they married in the hope thereby to regain their former virility. Patients of this class belong as a rule to the category of neurasthenics; the question is only in which way they acquired the disease. There is at any rate no doubt that the neurasthenia is partly due to the sexual excess, as no matter how little we believe in the origin of central diseases on this basis, neurasthenia certainly does arise in such a manner. To a further extent, however,

the patients are individuals who have become neurasthenic for other reasons, such as primary disposition, mental overexertion, etc. In their case the danger that sexual excesses will eventually claim their revenge, is doubly great; what might in other individuals lie, perhaps, as yet within the limits of normality possesses in men thus predisposed the character of something excessive. At all events, it means that we must regard the occurrence not as a solitary affection, but as part and parcel of a general malady which requires consideration in the first instance. The prognosis can be declared with the greatest reserve only. Sexual neurasthenics of this sort are easily relieved, but difficult to cure. At the beginning of almost every case treated, the treatment is followed by an improvement in the general condition, and even in the local complaint. The return of the morning-erections particularly is duly noticed and reported, but as soon as the suggestive influence of the treatment is gone, there is often no further progress. It is clear that in treating these conditions the general treatment must be distinguished from the purely local. The former is always indicated, the latter not always. I cannot enter here into a consideration of the different modifications of the anti-neurasthenic treatment in general. What can be achieved here by dietetic rules, by sportsmanship, baths and mineral-water cures, is well known, and it is just as well known that in these cases particularly, routine treatment is injurious and that each case must be treated on its merits after a most careful examination of the whole body. The most difficult thing to decide is the question whether any medicinal remedies should be employed or not at the same time. In addition to the general roborants, such as iron, manganese, etc., and the sedatives, such as the bromides, there are a number of remedies which enjoy a reputation for specific action. Especially arsenic in large doses is considered to be effective in this respect, and even in lay-circles and in literature this drug is known to play an important part in connection with this subject. I may recall for instance the "pillules Jenkins à base arsénicale" in *Daudet*. It is, however, universally recognised that the beneficial result is nothing but a passing stimulation and not a real improvement, and that the momentary

rise is usually succeeded by a still deeper fall. This applies to an even greater extent to cantharides which is probably no longer prescribed by any physician in such cases. As to the other so-called aphrodisiacs, nux vomica, phosphorus, ergotin, etc., it is sufficient to barely mention them; on closer observation one will hardly ever obtain permanent results from them. I must, however, devote some little space to two remedies because the patients generally ask for them; in fact many are in a position to narrate their previous experiences on the subject. I refer in the first place to the injections of testicular extract introduced by *Brown-Séquard*. In this original form the preparation is hardly ever employed any longer; it is now administered either internally as a medicament under the name testiculin or some other such appellation, or as Sperminum-Pöhl. Personally, I have never been able to satisfy myself about the efficacy of these remedies in cases of loss of virility, but I wish to point out that *v. Pöhl* himself does not attribute to his spermin any specific properties, but regards it exclusively, and in my opinion rightly so, as a general excitant and nervine.

The other remedy is yohimbin, prepared from the yohimbene leaves which are regarded in Africa as decidedly aphrodisiac (*Spiegel*). It must be admitted that experiments on animals (*Löwy*) have demonstrated that congestions in the genitals and erection can be obtained by means of this remedy. I have already prescribed it by now in a sufficiently large number of cases, but must confess that I have somewhat modified my former very favourable opinion of the drug. What strikes me particularly, is that there is hardly a patient who consults me with regard to impotence that has not already tried yohimbin among the many different unsuccessful remedies; the high price of the preparation causes the disappointment to be felt still more keenly. Nevertheless one does see now and then favourable results, and I believe that we are still ignorant of the differentiation in the indication. The remedy is probably useful in some cases, but in others, or rather in the majority, it is absolutely useless.

What has been said so far refers principally to the general treatment. A local treatment is in addition indicated in my

opinion in those cases only where we have reason to assume that the neurasthenia has really developed from the sexual organs. Even in this case I believe only in the most reserved methods of treatment; every artificial over-irritation is sure to be followed by a still severer depression. The first prescription includes therefore complete rest of the affected organ; there must be no attempt whatever to perform sexual intercourse. The patients, especially married men, cause themselves great injury by forcing such attempts upon themselves every now and then, and often by the aid of very unsuitable irritants, such as alcohol, etc. The amount of physical and moral damage produced by these fruitless irritations is altogether incalculable! In milder cases, the prohibition of intercourse is, as is well known, alone sufficient to obtain a cure; not infrequently the prohibition is after a time and under favourable circumstances disregarded and the lost self-confidence is in this way regained permanently. This plan is greatly to be recommended in the case of married men.

Of real local methods of treatment I place in the front rank the hydriatic and thermal stimulants; applied in the shape of *Arzberger's* rectal frigorifics they can at any rate do no harm. *Winternitz's* psychophor necessitates the introduction of an instrument into the urethra, and is therefore not quite so harmless, but its suggestive effect is a materially greater one. In addition to these, I almost always recommend sitz-baths according to the resisting power of the patient; at first they are ordered continuously warm and with the addition of a little salt (about 28° C. and 4 lbs. of salt); gradually they are allowed to be taken colder and containing more salt (up to about 22° C. and 8 lbs. of salt) or in the form of cold plunge baths of short duration. From electricity I have seen less favourable results; the form in which I apply it by preference is that of induction-currents with the introduction of one pole into the rectum and the other placed against the symphysis or—more rarely—into the urethra. The massage of the external genitals, recommended by several writers, especially by *Zabludowski*, I do not consider on account of the obvious danger of masturbation free from objectionable features. Massage of the prostate would appear to be indicated only when this organ presents some mani-

fest changes. The same thing applies in a very marked degree to the cauterisations of the urethra, especially of the colliculus seminalis, which is applied sometimes quite indiscriminately. I am firmly convinced—and the same opinion has repeatedly been expressed by such eminent authorities as *Fürbringer*, *Finger*, and others—that just in these cases of sexual neurasthenia or neurasthenic impotence far more injury than good is done by local therapy, unless the latter is applied with the most careful discrimination. Other proposed measures, which sound even more adventurous still, such as the resection of the dorsal vein of the penis, etc., we may well leave out of consideration altogether.—The various purely mechanical supporting-apparatuses (*Gassen* and others) or bandages (*Gerson*) may, perhaps, be given a trial in such cases where the procreation of offspring is a matter of great moment; judging from the opinion of competent authorities they succeed sometimes in achieving at least the desired result.

I should like to point out again, though it is hardly necessary to call attention to it specially, that one must not by any means be too hasty with the diagnosis of sexual neurasthenia in cases of commencing impotence. It is imperative to make sure in every individual instance by careful examination whether there is not a central nervous affection accountable for the trouble. It is well known, that especially tabes, and also general paralysis of the insane, develop at times in such a way that a stage of extreme sexual irritation is sooner or later followed by one of paralysis which is ushered in with a diminution in the virility. It is evident that the conception and treatment of the cases undergo thereby a considerable modification.

Priapism.—Materially dependent upon spinal changes is finally the not very frequent phenomenon of priapism, if we understand by the term involuntary erections totally unconnected with sexual excitement. The individuals affected with this most troublesome complaint imagine as a rule that they can obtain relief by the performance of cohabitation; this is, of course, not the case; the often repeated intercourse is on the contrary injurious and the patients must be distinctly warned against it

6. Diseases of the bladder.

There is not very much to say about the diseases of the bladder in their relation to the married state. In man especially they play a minor part and a few general observations will therefore suffice in dealing with them.

Cystitis.—As regards first the inflammation of the bladder, the so-called vesical catarrh, we know now that an infection is necessary for its production, but this infection can only take effect if it meets a soil made suitable by congestion, retention trauma, or similar causes. Among the opportunities for infection we must place foremost the one which favours gonorrhœa, that is, generally speaking, non-connubial intercourse. It is therefore quite clear that unmarried men supply the largest contingent of sufferers from cystitis. If the disease does break out in a married man the suspicion of gonorrhœa is nevertheless justified. There is unfortunately a vicious circle often observed in these cases—the husband infects the wife and she in her turn infects him again. An increased congestion is also sometimes here an important causative factor. The cases are by no means rare in which an apparently extinct gonorrhœa—extinct even in the opinion of a medical man—breaks out afresh soon after the consummation of the marriage and leads at once to cystitic phenomena. The continued sexual irritation has evidently prepared the soil. At other times a predisposing condition is supplied by an irritating constitution of the urine, brought about by dietetic errors. One would feel inclined to expect in this regard a different and protective effect from the regular life of the married state. It happens for instance very often that some individuals suffer after partaking of new and insufficiently-fermented beer from quite acute and rapidly passing irritative symptoms with exceedingly violent vesical tenesmus, and one naturally observes this occurrence far more frequently in bachelors given to a less regulated mode of life. At any rate, it is easier for married men to adopt the necessary dietetic prophylaxis.

It stands to reason that sexual intercourse must be prohibited

in all cases of acute as well as chronic cystitis or restricted as far as possible. This part of the treatment must on no account be forgotten, and if for no other reason than this, it is often advisable to separate husband and wife by sending the former to some institution or watering-place.

Of far greater importance however is the participation of the bladder in some diseases of the abdominal organs in the female sex.

Vesical troubles during menstruation and pregnancy.—Many women suffer from urinary troubles during menstruation even under normal circumstances; in fact the advent of the period often announces itself first of all by an increased desire for micturition and also by a burning sensation while passing urine. These slight disturbances disappear immediately after the cessation of the period or in the course of it, and do not require any special treatment. The disturbances on the part of the bladder during pregnancy are on the whole also of a physiological character; they are mostly the results of the pressure which the pregnant and anteriorly inclined uterus exercises on the bladder and urethra, and disappear, too, after the termination of the pregnancy. We must not, however, forget that such a condition may easily lead to an inflammation of the bladder, predisposed as the latter is to become affected through the congestion and the pressure. It is therefore advisable in every case where a woman complains continuously and seriously to institute an examination of the urine (by catheter). The treatment of pregnant women suffering from cystitis is by no means a simple matter. If at all possible it is best to confine oneself to internal remedies: urotropin or similar preparations are borne most easily, while sandal-oil is on account of the usually present nausea contra-indicated. Local treatment is generally to be avoided so as not to run the risk of bringing on a miscarriage through the irritation, but still there is often no other cause open, and especially catheterisation must frequently be resorted to for the reason that, along with the inflammation—or even without it—retention of urine may occur. Where internal remedies do not suffice to clear the urine, and where there is the slightest

suspicion that the bladder is imperfectly evacuated local treatment is indicated. Usually boracic irrigations are sufficient; otherwise weak silver-solutions may be prescribed in the first instance; on the other hand, the instillation of strong silver solutions, which, judging from the clinical picture one would feel inclined to employ by preference, is on account of the above-mentioned risk contra-indicated.

By means of warm baths and vaginal irrigations it is also possible—provided there are no contra-indications—to exercise upon the complaint a beneficial influence. It is only in rarer cases that narcotics are required. As to sexual intercourse it is at all events imperative to insist upon abstention where there are cystitic symptoms present, though there may be a difference of opinion as to the admissibility of such intercourse during pregnancy altogether.

Vesical troubles during labour.—It is doubtless often possible to cure the cystitis of pregnant women after the termination of the labour, that is, as soon as the severe causative mechanical disturbances have disappeared. But on the other hand the labour process as such presents a not inconsiderable danger to the bladder. In the first place retention of urine may result at the beginning of the labour through the compression of the head against the symphysis, and the retention may in its turn, if it lasts too long, prove an obstacle to labour through the excessive distension of the bladder. The application of the catheter—which, by the way, is not always easy of accomplishment is here absolutely necessary. Then, the strong pressure of the child's head against the urethra may cause injury to the latter which may result in incontinence of urine. Similarly, the employment of forceful extraction, especially with the help of forceps, may give rise to such partial gangrenes of the urethra or of the sphincter vesicæ, to the formation of vesico-vaginal fistule, and so on, contingencies into which we cannot enter here at great length. A most frequent result of labour is also a retention of urine which though not a serious occurrence in itself and one that can easily be remedied by catheterisation may become a serious complication through the possible addition of an infection of the bladder. Under the

circumstances prevailing at the time, especially if there be profuse lochial discharge, the necessary asepsis of the catheterisation-process is exceedingly difficult to obtain, and the protection of the bladder from cystitis is a very uncertain one. It is at all events advisable in such cases to administer urotropin prophylactically and to apply local treatment as soon as there are the slightest signs of a cystitis. We unfortunately see pretty often chronic cystitis developing in association even with normal labours, and as a matter of fact I am inclined to look upon these cases as the principal contingent of vesical catarrhs in women.

Vesical disturbances and diseases of women.

—In addition to the disturbances occasioned through pregnancy, labour and child-bed, we have yet to mention those which depend directly from diseases of the female genitals. It is well known that displacements play an important part in this connection; especially prolapse is generally accompanied by a cystocele which may in its turn cause an obstruction to labour. Besides, the female bladder generally participates in the whole list of troubles which are produced in the true pelvis by inflammation and supuration. It is, perhaps, not yet sufficiently known that one can frequently by an illumination of the bladder obtain the first information as to the existence of such diseases. The chronic inflammation reacts on the region of the neck of the bladder by a lymphatic and sanguineous congestion giving rise to the more or less pronounced picture of "œdema bullosum." Exudations arch forward the vesical wall, cicatricial contractions (old, parametric indurations, etc.) fix it and give rise occasionally to real diverticula ("traction-diverticula" as I am in the habit of calling them from the analogy of those which occur in the œsophagus). In a word, the bladder is to a considerable extent affected by all the evils which appear in married women (mostly through gonorrhœal infection), and although its treatment does not constitute the primary object, yet it must never be forgotten that vesical troubles are often helpful in leading one to a correct diagnosis. As a matter of fact it is astonishing how many women seek medical treatment for this complaint alone, whereas a proper examination only reveals the true cause of the trouble. I saw a typical example

of this class only a short time ago in a young sixteen-year-old girl who was sent to me on account of extreme urinary difficulties suggesting vesical calculus, and in whom I detected on examination a perfectly healthy bladder but complete atresia vaginæ with hæmatocolpos.

Enuresis.—I wish to add here the description of a complaint which, though in itself neither serious nor dangerous, can, nevertheless, assume great importance in relation to the question of marriage: I mean enuresis nocturna. In children this affection is regarded more as an inconvenience (unfortunately sometimes still as a bad habit) and if the various internal and external remedies employed fail, one consoles oneself with the thought that the disagreeable complaint will in the course of time disappear of itself. Frequently this is the case; it does happen, however, that the trouble resists not only all treatment, but that it persists in spite of the age becoming more mature or that it even becomes worse as time advances. The matter begins then to wear a serious aspect. There are young girls in whom an involuntary evacuation of the bladder takes place regularly every night once or even several times, so that traveling, sleeping at hotels, and so on, becomes an absolute impossibility. Every possible thing is done, especially in view of a contemplated marriage, to put a stop to the nuisance, but unfortunately the condition is often extremely obstinate. In a case of this description in which I tried all the dietetic measures, all the well-known inner remedies and some of the local procedures (dilatation of the urethra, application of cold, cauterisation, etc.) recommended, without obtaining any relief, I decided to perform the operation suggested by *Gersuny* of twisting the axis of the urethra—but, although I did the operation twice, the success was only a temporary one extending over a few months only. In some cases greater success was achieved by paraffin injections. Recently epidural injections have also been recommended by some (*Cathelin, Strauss*, and others).

Of still greater significance than involuntary passing of urine is, of course, permanent incontinence, that is, the constant dribbling from the urinary meatus. These cases are generally the result of injuries at the neck of the bladder, of vesico-vaginal

fistulæ, if not of a perforation of carcinomatous ulcers, and the necessity of an operation is then imperative. One should not, however, forget the extremely rare possibility of an abnormal opening of a ureter into the vagina, which can also cause permanent wetting while the bladder undergoes characteristically enough at the same time the process of filling and emptying at almost normally regular intervals. In these cases, too, operative proceedings are stringently indicated, although they are connected with very great difficulties and are often highly unreliable.

Calculi.—I do not want to leave unmentioned in this connection the calculi and foreign bodies of the bladder. In the male sex calculi do not play a very great part from the point of view of the sexual function; the pain and the hæmorrhage, though, are increased through sexual excitement and the prohibition of intercourse is therefore indicated. Generally, however, it is hardly necessary for the doctor to give instructions on the point, as the patients themselves who are in the habit of referring the pain arising from the calculi to the tip of the penis soon learn to avoid erection and ejaculation. In the female sex vesical calculi are of importance in their relation to the labour-act. I have already mentioned above that cystoceles are capable of obstructing labour; if there should happen to be in one of them one or more calculi (I remember a case in which there were found at the post-mortem in a cystocele 36 cuboid-shaped calculi of triple phosphate) this obstruction may become very serious indeed. There have been cases described in which the nature of the obstruction was not by any means clear and which were about to have Cæsarian operation performed on them, when a calculus was suddenly and spontaneously "born." In view of the great dangers which arise in this way to the wall of the bladder, and particularly on account of a possible perforation, it is at all events advisable if there should happen to be during a pregnancy the slightest cause to suspect the presence of concretions, to institute immediately an examination with the sound so as to remove eventually the obstacle in good time.

As to foreign bodies and their relations to the sexual life

I have already discussed the subject in detail when speaking of the diseases of the urethra. I may once more point out that it is at any rate in many cases a question of masturbation and that it is the duty of the physician when coming across such incidents—and they occur in married individuals as well!—to investigate into the sexual life of the persons concerned.

Tumours.—Tumours of the bladder need to be considered here from one point of view only: it is well known that their chief symptom is profuse hæmorrhage which ceases, however, after a few days. Men are generally very much alarmed by this and they apply for medical advice as a rule after the first attack. In women, however, it is possible for the hæmorrhage from the urethra to be mistaken for menstruation, so that the symptom passes without receiving due attention. The physician must therefore think of this, too, and notice whether there is any blood in the urine.

Tuberculosis.—As regards tuberculosis of the bladder we have to say the same as was said with respect to the tuberculosis of the uro-genital apparatus as a whole: Though direct infection by means of the sexual intercourse has not been proved, the possibility of its occurrence must nevertheless be conceded and a warning issued in this respect. But apart from this, sexual abstinence is strictly indicated in tuberculosis particularly, because every congestion and irritation aggravates the complaint.

In estimating the influence of marriage on diseases of the bladder or the importance of vesical troubles, no matter of what kind, in questions relating to married life, the following circumstance is finally of the greatest significance: We have not only a local disease to deal with, but must always remember that during and by marriage especially an extension of the trouble must be feared. No one who suffers from a catarrh of the bladder is sure that the process will not spread to the kidneys as well. And it is this point which requires consideration in connection with the contraction of marriage. In men the danger is after all not so very great—but still the consent to a marriage should not be given where there is pronounced cystitis present, until a cure has been effected; similarly such consent should be

withheld in cases of stone of the bladder until an operation has been performed, and in tuberculosis and tumours absolutely. In women the position is even more serious; in their case we have to take into account not only, like in men, the disease and the possible shortening of the life-duration, but also the dangers which arise in consequence of pregnancy. One is therefore at all events bound in all the conditions enumerated above to prohibit absolutely the occurrence of conception!

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XX

**Diseases of Women, including Sterility in
Relation to Marriage**



DISEASES OF WOMEN, INCLUDING STERILITY, IN RELATION TO MARRIAGE

By L. Blumreich, M.D. (Berlin)

The basis of every community in the widest sense of the word is formed by the family. A glance at natural history shows us that the single individual represents but an incomplete part of the species. It is only by the association of two individuals, sexually differentiated, that the organic whole is created which represents completely the type of the species. Man and woman regarded as single beings are nothing but two inter-dependent halves of one unity. Without the fusion of the two individuals each of whom is provided with different sexual instruments, the species would die out, so that from the biological standpoint, marriage is not an end in itself, but must needs regard the propagation of the species as its object.

Husband and wife, the two halves of the conjugal unity, are constructed differently from one another in many respects both morally and physically, and it is precisely in this differentiation of their qualities that the mutual attractions of the sexes lie. The difference is most markedly pronounced in those organs which are intended to serve for the preservation of the species, the so-called genital apparatus, and it is the integrity of these copulative organs and their sound condition which constitute the foundations in the fulfilment of the object of marriage, in the fusion and mutual supplementation of the sexually single beings and in the procreation of the offspring.

The reciprocal relations between the female sexual organs and the married state are numerous and important; important, because certain complaints are entirely due to conditions prevailing chiefly in the married state.

In the consideration of the various groups of diseases we shall, generally speaking, have to base our remarks upon the following questions:

I. In how far are the factors of married life as such to be regarded as causes of the diseases in question?

II. Are the diseases in question influenced favourably or unfavourably by the factors operating in married-life and peculiar to it?

III. What reaction have the diseases in question on the course of the married life?

- a. *By obstructing or preventing cohabitation,*
- b. *By producing sterility,*
- c. *By influencing pregnancy, labour and child-bed,*
- d. *By conveying the disease to the husband,*
- e. *By conveying the disease to the children,*
- f. *By hindering the wife in her capacity as head of the household.*

IV. Under what circumstances is marriage to be prohibited in the presence of the diseases in question?

Treatment deviating somewhat from this method of subdivision is required by the first two chapters: "Injuries of the female genital organs through cohabitation" and "Diseases of the female genital apparatus through abnormal sexual intercourse (coitus interruptus, preventive or anti-conceptional coitus, coitus inter menstruationem)." These chapters will therefore be taken separately in the consideration of the relationship between marriage and diseases of women.

I. Injuries of the female genital organs through cohabitation.

That injuries of the vulva and of the vagina which have repeatedly led to subsequent severe abdominal diseases and even to death have resulted in by no means very rare cases from the act of cohabitation as such, physiological though it be, is comparatively speaking a fact not sufficiently appreciated by non-

gynæcologists. Text-books on forensic medicine generally support the view that the dull force of the in-rushing penis is hardly capable of producing severe injuries especially in the deeper parts of the genital organs, and that where such injuries are alleged to be due to simple coitus, it is more likely that they are the result of violent manipulation, digital or instrumental piercing, and so on. *Veit* also considers an injury to the vagina through coitus alone possible only where it (the vagina) is quite abnormally misformed or cicatrised through definite pathological processes, but especially where it is atrophied in consequence of old age.

No doubt in a number of cases violence during intercourse cannot be excluded and is even probable; in a larger group, however, nothing more seems to have happened than a mere destruction of tissue caused by the impetus of the membrum virile. Surprising information in this direction is furnished by the interesting compilation of *Neugebauer*. This author has collected 157 cases of more or less serious injuries to the female genitals; an imposing figure, indeed, if we bear in mind that necessarily very few observations of this class are published. Since then a number of further cases have been communicated.

What importance must be attributed to these injuries is shown by the fact that in 22 out of these 157 cases death ensued, partly as a direct result of hæmorrhage, partly through supervening parametritis, perimetritis, sepsis, etc. In most of the cases it was more or less profuse hæmorrhage that induced the injured persons to seek medical assistance, and this hæmorrhage was in about half the number of all the cases so severe that firm plugging of the injured tissues, acupressure or suture had to be resorted to.

The best-known of these hæmorrhages are those caused through the defloration-rupture of the hymen in the first night which necessitate occasionally medical aid on account of the difficulty to arrest the bleeding, or for the purpose of treating the anæmic consequences resulting sometimes from the severe loss of blood. Though the diagnosis is in these cases ridiculously easy, the situation is both to the doctor and the married couple in question a most embarrassing one, and a

great deal of tact and decent self-possession is needed to induce the young and newly married wife to allow herself to be subjected to the necessary manipulation. A thorough examination of the bleeding spot is essential as in every more or less serious hæmorrhage, especially if pallor or other signs of acute anæmia are manifesting themselves, and can only be made with the thighs well separated, with the genitals uncovered, and in a good light; most careful cleansing and irrigation of the parts with some disinfectant is indispensable. Should the hæmorrhage not cease upon the application of firm pressure with an antiseptic gauze-tampon—which is, however, in the ordinary radiated lacerations confined to the hymen, nearly always the case—it becomes necessary in more parenchymatous hæmorrhages to effect acupressure or if a blood-vessel is spurting, to secure it with forceps and apply a ligature. That most scrupulous asepsis is essential goes without saying. These severe hæmorrhages in injuries of the hymen, where the wound does not extend into the neighbouring tissues, arise either from an abnormally great vascularity of the hymen, or are due to hæmophilia. If the latter is the case, there are generally some anamnestic data pointing in that direction. As far as I know there has been a case of death reported in association with isolated hymeneal ruptures, which occurred in a newly-married wife (*Tardieu*). In that case hæmophilia had several times been observed in the family of the young woman.

On the whole, however, the prognosis of these lacerations is a very favourable one; if the bleeding is arrested and an infection of the small wound prevented, healing takes place within a few days. It is noteworthy that among the numerous cases of *Neugebauer* there are only 10 mentioned in which such injuries of the hymen with considerable hæmorrhage took place during coitus and where there were not other parts injured as well; in other words, an insignificant minority. The reason is probably that such comparatively unimportant cases are not published, unless the hæmorrhage is downright of a life-threatening character.

The prognosis is unequally more serious in extensive injuries of the genitals. The lacerations of the hymen which extend

beyond its limits and affect the neighbouring parts of the vulva and vagina, are the most favourable among these injuries. Of great importance are then longitudinal ruptures of the vaginal wall (curiously enough these are almost without an exception situated on the posterior and right walls). The posterior vaginal curve particularly appears to be predisposed to deeper ruptures; in a fair number of cases this wall, along with its pelvic connective tissue, was to a considerable extent laid bare by the copulative act, and four times the tear of the posterior wall continued as far as Douglas's pouch, which means that the abdominal cavity was opened.

What terrible lacerations and destructions of tissue can under certain circumstances take place through the violent impetuosity of the attacking penis, can be seen from the cases in which a penetration occurred of the structures lying between vagina and rectum or between the external genitals and the perineum or the rectum, cases which thus developed recto-vaginal, recto-perineal, and recto-vulvar fistulæ with passage of flatus and feces through the vagina, often with complete fæcal incontinence. In some of these cases the hymen itself remained intact and the injury affected only the neighbouring parts of the vulva, frequently with the formation of a false passage into the soft parts. Several times the urethra was also ruptured and vesico-vaginal fistulæ resulted from the coital injury, at other times extensive hæmatomata formed in the labia majora with or without injury to the soft parts.

Such a result from coitus I saw myself about a year ago. The case related to a woman 42 years old who had had 4 children and upon whom coitus was forced by her drunken husband. She stated that she had offered violent resistance and thrown herself about so that the penis of the husband did not enter into the vagina for some time but kept striking against the external genitals. All at once she experienced an acute pain and being completely exhausted succumbed to her husband's violence. There was no hæmorrhage. The next day I discovered a fluctuating hæmatoma, about the size of a hen's egg, in the upper third of the right

labium majus; the soft parts were not found to be injured. Absorption of the painful extravasation took place only very gradually in about four weeks.

One would imagine that injuries during coitus occur principally at first cohabitations. But this is not at all the case; very often the most considerable destructions of tissue have happened in women who have for years been in the habit of practising intercourse, and even after one or more preceding labours.

The lower classes naturally supply the main portion of the patients thus injured, but it would be wrong to assume that individuals belonging to the higher strata of society do not participate in these severe traumata. On the contrary, the women thus injured recruit themselves from the different classes, and *Neugebauer* points out that among his 157 cases there were, strange to say, two wives of medical men.

Of great importance to our subject is in these injuries during coitus the question of the predisposing factors. From the cases observed it is possible to establish quite a number of such factors which favour the occurrence of these coital injuries. I do not, of course, include rough violence such as accompanies all acts of rape and which is capable of causing more or less severe injuries especially when the persons attacked are children. Closely allied to rape is the exercise of coitus during a state of intoxication of either one or both sides, as the regulating and moderating inhibition on the part of the mind is here absent altogether or at least materially reduced. In the coital injuries occurring especially among the lowest ranks this etiological factor is one by no means to be underrated.

Of importance are further malformations of all sorts in the hymen and in the vagina, hymen biformis, a very carnosous and abnormally firm and hard hymen such as is seen in elderly virgins; a too small opening in the hymen, the absence or imperfect development of the vagina, closure of the vagina through cicatricial contractions, septa, double vagina.

Several times gynaecological operations at the vagina had been performed a short time previously, *f.i.* colporaphies, plastic perineal operations and even vaginal total extirpations.

An etiological element is further seen in the puerperal con-

dition of the vagina. I have seen a case of this kind, where twice-repeated coitus on the 16th day of the puerperium led to an oblique rupture in the posterior vaginal wall $2\frac{1}{2}$ cm. long by $\frac{3}{4}$ cm. deep. As there was a sharp though rapidly disappearing pain immediately after the second coitus, accompanied by a slight hæmorrhage, the married couple in question became rather alarmed. The examination revealed a laceration which was not in this case very considerable. That the vaginal wall is easily lacerable in the third and even in the fourth week after labour is shown by *Calman's* tabulation of the cases in which interruptions of continuity were caused by even skilfully conducted gynæcological examinations.

As accounting for the lacerations in the posterior vaginal wall especially, the backward displacement of the uterus which causes a considerable tension in the posterior curvature of the vagina, is frequently mentioned as a predisposing factor.

Equally, vaginismus, that is a spasm of the introitus vulvæ and of the voluntary muscular mass of the pelvic floor, has been observed, though rarely; further a spasmodic state of contraction of the entire smooth musculature of the bladder, rectum and vagina and also of the vaginal cavity. (*Schäffer.*)

Then, abnormal positions during coitus, such as half-sitting or half-standing, or coitus *more bestiarum*, etc., have been made responsible for the occurrence of these injuries.

In the communications published after that of *Neugebauer* great stress is laid upon one point particularly, a point which *Warmann* was the first to call attention to emphatically. While relegating to a second place the usual explanations, such as the disproportion between vagina and penis, abnormal position during coitus, vulnerability of the vaginal mucous membrane, etc., *Warmann* puts in the front place the particularly intense sexual excitement of the wife. For the occurrence of the very frequent uncomplicated vaginal lacerations the increased sexual irritative state is both a preliminary condition and a cause. All other factors deserve only a secondary importance. This opinion of *Warmann* has several times been confirmed. (*Bohnstedt, Ostermayer, Hermes.*)

How this increased irritability in the wife favours the occur-

rence of the lacerations *Warmann* does not explain. *Bohnstedt* points out that a convulsive condition of the entire musculature of the pelvic floor with tension of the vaginal curve such as was found by *Schäffer* as a cause and referred by him to neuro-pathic propensities, is, perhaps, produced by a specially intense excitement of the wife, becoming thus a link in the chain.

The supposition that the orgasm is capable of causing such a spasm of the musculature as can in its turn lead to the consequences described cannot be dismissed straight away.

But that the sexual over-irritation of the wife during coitus possesses almost exclusive significance in the causation of this kind of injuries, I am inclined to doubt. If this view were correct we should far more often ascertain such deep interruptions in the continuity than we do at present.¹ I rather believe—an opinion which is shared by *Schäffer*—that the excessive sexual irritation of the participating wife plays an auxiliary, though by no means unimportant part,—perhaps through the medium of an extended spasmodic condition of the musculature—but that several factors coöperate as a rule which as stated above are different in their origin.

From this opinion arise consequently certain indications for the prevention of coital injuries. It should really be unnecessary to mention that the husband ought not to force his wife in a rough and violent manner to gratify his passion, and thus to subject her to influences which may under certain circumstances prove disastrous to her genital organs, but the by no means rare disclosures and complaints of female patients seem to show that the necessity does exist.

The husband of one of my female patients who had been brought, through the treatment of his chronic prostatitis by a urologist, to an extraordinarily high sensual state of irritation, threw himself for many weeks several times daily upon his wife and demanded from her imperatively to submit to his will heedless of the time of day

¹The question is, of course, as *Warmann* truly points out, of great forensic importance. If the injuries to the vaginal walls are really caused by the sexual over-excitement of the woman, rape would be excluded in all those cases where they constitute the only symptoms present.

or the unsuitability of the occasion. Although the result was not like in the previous case which I mentioned, an injury to the genitals, no less serious consequences arose in the young and sensitive though somewhat frigid wife throughout the married state. The patient developed besides neurasthenic symptoms of fright, a deep resentment against the husband to whom she had originally been very much devoted.

Intercourse during intoxication or semi-intoxication is also one of the excesses which must be strictly avoided, although it is worth mentioning that in slight weakness of the virility or in frigidity of the husband or wife a preceding opulent meal with a moderate allowance of alcohol often renders cohabitation possible, or transforms what is to one or both sides an irksome duty or habitual act, into a union of real enjoyment. (See *Fürbringer's* article.)

More severe malformations such as atresia of the hymen or of the vagina, absence or imperfect development of the vagina, etc., are diseases which make themselves apparent in the virgin already in the form of disorders of menstruation. As we shall see when discussing these diseases individually, certain indications make it incumbent upon the medical attendant who is consulted by a young girl or her parents with a view to giving his consent to a contemplated marriage, to make a gynecological examination, and should he find any of the malformations mentioned, his duty is to utter a warning accordingly.

Where there have been any preceding vaginal operations, especially plastic ones, conjugal intercourse must, of course, not be indulged in before the formation of hard and resistant cicatricial tissue. An abstention-period of 5 weeks from the operation is probably the minimum required; very often a certain amount of debility in the wife necessitates a further postponement.

The same thing applies to the puerperal period. The involution of the sexual organs cannot be regarded as completed before the lapse of six weeks, and on account of the vulnerability of the mucous membranes the conjugal intercourse must be suspended during that time. If special circumstances, for instance

pronounced nervousness of the married couple in consequence of imperfect gratification, render the medical veto impracticable, there is, perhaps, no objection in permitting the resumption of the intercourse a few days earlier or a week at the outside, as long as it is carried out very carefully and tenderly, provided the puerperium has been an absolutely normal one and the general condition of the wife is especially favourable. Acts of bestiality such as I have seen in a case at the maternity-clinic of the Charité Hospital, where the paramour in question who lived by the earnings of his mistress, forced her to submit to coitus after the commencement of the labour-pains and again on the fourth day of the puerperium, are in all probability extremely rare among the middle and upper classes.

Where the wife is subject to vaginismus and an entrance of the male member into the vagina is thereby rendered impossible, force must on no account be used to overcome the resisting muscular spasm.

It is often necessary to speak out clearly and without circumlocution. I have frequently come across cases in which the young husbands regarded the unattainable copulation as an ignominious proof of imperfect virility for which they tried every possible means except the most obvious one, namely suitable treatment of the wife by an experienced medical man.

Abnormal positions of one or both of the partners performing coitus have, especially in combination with intense sexual excitement, so frequently been demonstrated as elements in the causation of injuries, that I desire to say a few words on the subject.

We must not forget that the unusual position during coitus plays in mild disorders of the male potency a certain therapeutical part. *Zabludowski* is right in recommending, "where one has become used to his partner," the exercise of the sexual act in some novel and hitherto not used position, f. i. the lateral, as by this means new associations and mental representations and new impulses are created. It is also usual under these circumstances to apply such measures as facilitate the performance of the act say, thorough oiling of the male member as well as of the female genitals. Where such premeditated changes in

the position are adopted for therapeutic reasons it is permissible to withdraw one's objection on account of the possibility of injury, and to recommend special caution, oiling of the parts and the avoidance of force.

It is, however, quite different as regards those not very rare cases where unbridled passion and perversion suggest the employment of the most bizarre situations. Here the doctor cannot point out too strongly the risks of injury, and his duty is clearly to condemn what is unnatural and under circumstances dangerous, although his words may be spoken to deaf ears.

II. Diseases of the female sexual organs through abnormal sexual intercourse.

(Coitus interruptus; employment of anti-conceptional remedies; coitus inter menstruationem.)

Diseases of the genitals after interrupted intercourse.—A form of cohabitation prevalent among the widest circles of the population is the so-called coitus interruptus or reservatus, by which term is understood the withdrawal of the penis from the vagina immediately before ejaculation. The object of the procedure is to prevent conception, and that object is obtained if the process is carried out thoroughly. The arrangement does not require any previous preparations of a disagreeable or inconvenient nature such as are demanded by the application of a preservative or the introduction of a protective pessary; nor are irrigations necessary afterwards in order to remove the semen deposited in the vagina—all these manipulations which to a sensitive woman especially present most objectionable features.

It appears that in Biblical times already, interrupted intercourse was practised. The act of Onan with his brother's wife was really not masturbation, but rather the withdrawal of the membrum virile shortly before the commencement of the ejaculation. The passage in Genesis (Chapter 38) says: "And Onan knew that the seed should not be his; and it came to pass

when he went in unto his brother's wife, that he spilled it on the ground, lest he should give seed to his brother."

As regards the effect of this form of cohabitation upon the nervous system I refer the reader to the chapters: "Sexual Hygiene," and "Diseases of the Nervous System in Relation to Marriage." Here we have only to consider the point whether and how far disorders of the female genital tract can be produced by the interrupted form of intercourse.

The literature on the subject is exceedingly sparse, and that is easily understood if we bear in mind how difficult it is to ascertain whether in any given case a disease of the female sexual organs has arisen exclusively through interrupted coitus and not also by other concurrent influences. Besides, we are here as a rule dependent almost entirely upon the statements of our patients, and every experienced doctor knows what important part is played, especially in women, by any consciously or unconsciously acquired prominence of an alleged injury. If we wish to make sure about something, we require a prolonged period of observation and careful notice of all the possible etiological factors concerned, the estimation of the results of treatment, etc.

The theoretical opinions on the physiological effect of interrupted coitus are not quite uniform. *Krafft-Ebing* maintains that in natural intercourse a relatively rapid emptying of the overfilled vascular system of the genital apparatus takes place after ejaculation. But this is different in interrupted intercourse. Here the increased vascularity is not succeeded by the normal depletion, and a detumescence of the blood-vessels takes place only gradually. If these temporary congestions are repeated frequently and over again, a chronic accumulation of blood forms in the genital tract which in its turn leads to severe alterations in the tissue of the various parts of the sexual sphere. *Eulenburg* sees the damage more "in the inhibition of the influence of the automatic-reflex chain of irritation."

As a consequence of the permanent congestion in the genital tract produced by the interrupted form of intercourse, *Goodell* describes a case of pronounced elongation of the cervix uteri. Influenced by this communication *Valenta* pursued the same

reasoning, and he now attributes to the reserved form of coitus, in which term, by the way, he includes coitus proper as well as the application of condoms, an extraordinarily great significance.

"Every gynæcologist comes across women who have during the first few years of their happy married life given birth normally and in rapid succession to 2 or 3 children, and whose other circumstances are equally favourable, but who, nevertheless, belong to that category of women who are rightly styled the plague of gynæcologists. They are mostly hysterical individuals who though of an age which is considered the most suitable for procreative purposes, have suddenly become sterile. This sterility is more and more accompanied by the well-known host of hysterical manifestations, and the patients get gradually so nervous that they become at last a burden to themselves and to their husbands and are compelled to seek medical advice everywhere and for a long time in vain for this constantly growing nervousness. Objectively, the examining physician constantly finds in these women who had previously never known the word 'nervous,' an intense hyperæmia of the somewhat sensitive and evidently enlarged uterus, accompanied as a rule by erosions round the os and by easily bleeding ectropional ulcers and a very profuse vagino-uterine secretion. If interrupted coitus continues to be practised the prognosis must be declared as unfavourable. The nervousness naturally increases with advancing age to an enormous degree, and if in addition religious scruples and self-reproaches make their appearance, regular insanity may eventually develop. Not infrequently this is the unmistakable basis of incurable and absolutely fatal diseases of the sexual organs. Judging from my experience I believe, I may say positively, that this factor supplies at any rate a fair percentage among the women suffering from fibroma or carcinoma uteri." A similar opinion is expressed by *Kisch* who has found among the consequences of a long continued coitus interruptus chronic metritis with the character of a relaxation of the uterus, retroflexion or antelexion of the uterus, catarrhal affections of the mucous membrane, inflammation of the ovaries, and perimetritis. He also considers the point worth discussing whether the striking increase in the number of cases

of new growths at the female genital organs noticed at the present day has not some causal connection with the practice constantly becoming more and more general in all circles, of employing anti-conceptual remedies. Equally, *Mensinga*, *Veit*, *Runge* and others attribute to the interrupted form of coitus great importance as the cause of a large number of chronic inflammatory affections.

In summarising my own experiences gathered by the aid of suitable material, I may say that it is impossible to give a general answer to the question of the injuriousness of a prolonged practice of interrupted coitus. We not infrequently see women who admit having carried on this practice for many years, and in whom there is no sign of any of the above-mentioned chronic inflammations of the uterus. In other women, however, there seems to lie in the circumstance an important etiological factor of severe inflammatory infiltrations in the genital apparatus. In some isolated cases, indeed, I think I may assume with certainty that the very severe chronic metro-endometritis present as well as other less severe sexual diseases, had no other basis but the abnormal form of intercourse, if I may judge from the unsatisfactory results of the usual therapeutic measures and the subsequent gradual improvement in the condition after the discontinuance of the irregular mode of coitus.

If we inquire more closely with regard to the first group, we often learn that the libido sexualis of the women in question is not at all pronounced, a circumstance, by the way, consonant with the generally lesser sexual desire of woman when compared with that of man, as pointed out emphatically by *Hegar*, among others, in his "*Geschlechtstrieb des Weibes*" (The sexual desire of woman). These frigid women have generally endured cohabitation—in the normal form too—as an act of conjugal duty only, but not as a pleasure. I believe therefore that the interrupted coitus is injurious to the genital system of those women only who are disturbed in their sensation of delight by this form of cohabitation, in whom the orgasm is not produced and who continue for hours subsequently to be tormented by feelings of an unsatisfied desire. In my opinion, which agrees with that of several others, the interrupted coitus has exactly

the same effect as coitus generally which passes off without gratifying the female partner, either because the husband suffers from premature ejaculatio seminis which occurs before the sexual orgasm has appeared in the wife, or because the latter is by some disorder or other deprived of this orgasm.

One thing I wish to emphasise, namely, that in women who do not feel sexually gratified, in whom sexual intercourse—in the normal form—does not reach its real physiological acme and its satisfying conclusion, and who are married to relatively impotent husbands, the same consequential conditions appear. These are not therefore phenomena characteristic of interrupted coitus, but consequences of an imperfectly concluded sexual cohabitation as such. Less sensual and frigid natures are spared the troubles mentioned, no matter whether the intercourse is interrupted or whether the ejaculation of the semen occurs prematurely. On the other hand in sexually hungry women the interrupted course of the conjugal embrace with its accompanying feeling of ungratified desire will, if continued for a length of time give rise to the diseases spoken of, when it is immaterial in which way the absence of gratification is occasioned.

Diseases of the genitals after the employment of protective remedies.—The other methods of preventive sexual intercourse are also capable of causing sometimes considerable injury to the female genital apparatus. Hither belong especially the protective pessaries frequently used by women and frequently introduced by them alone; the one nearly always employed is the so-called Mensinga-pessary, a hollow semi-sphere of india-rubber to the free border of which is attached a springy steel ring covered with india-rubber. The hollow sphere is slipped over the portio, the ring, which must correspond with the size of the vagina, presses against the vaginal wall and is thus held in position, while closing the upper portion of the vaginal canal and the os uteri against the semen deposited in front of the pessary.

If the pessary corresponds exactly with the width of the vagina, and is introduced by the doctor it generally fulfils its purpose; occasionally, however, failures occur under these circumstances too; the pessary gets displaced especially during somewhat

impetuous intercourse and spermatozoa are thus enabled to enter into the cervix along the sides of the apparatus. Failures happen still more often if the pessary is introduced by the wife alone and not by the doctor, or if she chooses it. It does not then as a rule cover the portio sufficiently and slides down easily. In such cases, however, it is not only that there is a failure to prevent impregnation, but there are actually injuries of the genital tract arising in consequence. Thus, if the ring is too big for the vagina, the pressure may cause gangrene, necrosis of the squamous epithelium or painful indentations. Ulcers, more or less in extent, may form in a semi-circular or partly semi-circular shape and produce an evil-smelling secretion which soon forces the sufferers to apply for medical relief. I have for instance not long since removed a large Mensinga-pessary from the vagina of a patient into which it had partly become embedded. The steel ring had penetrated the left wall of the vagina in a sort of groove almost $\frac{1}{2}$ cm. deep and 4 cm. long, and profuse proliferation had taken place on each side of it; for several days the patient had suffered from acute pain and a most disagreeably smelling secretion.

Like all soft India-rubber rings, Mensinga-pessaries also cause secretions from the vagina, and if sufficient cleanliness is not practised or if the necessary irrigations with the addition of a disinfecting fluid are not carried out with regularity, vaginal catarrh is apt to arise. But even where the pessaries are introduced after the most careful cleansing, and disinfecting vaginal irrigations are employed daily during their use it happens occasionally, though rarely, that purulent secretion occurs which may in its turn give rise to severe endometritis or possibly inflammation of the pelvic connective tissue and of the covering peritoneum.

These occlusive pessaries are therefore by no means devoid of danger to their wearers, nor are they particularly pleasant. The regular monthly visits to the doctor for the purpose of having the pessary removed before the commencement of the menstruation period, and then again to have it re-introduced at its termination, a procedure which is of course absolutely necessary, are alone sufficient to cause to the women consider-

able reluctance. Not less unpleasant are these occasions to the doctor himself, although unimpeachable reasons of health are in the majority of cases the cause which necessitates the adoption of anti-conceptual measures.

On the whole it may be said that occlusive pessaries fulfil their object very well if properly applied and that they do not as a rule produce in the women wearing them any evil consequences so long as extreme cleanliness is practised. It cannot, however, be maintained that they are absolutely reliable in the prevention of conception.

Far more dangerous are those preventive apparatuses that are provided with a small ivory or metal rod which is meant to be introduced into the uterine cavity for the purpose of closing the cervical canal and of making it thus impossible for the spermatozoa to travel upwards. The apparatuses of this sort show various modifications. The most serviceable is the arrangement provided at the lower end with a small ivory plate—of the size of a sixpence—attached to a round ring, and which, intended to lie in front of the cervical opening, protects the latter from the entrance of impregnating spermatozoa. Such intra-uterine stems were formerly used frequently in the treatment of some diseases of the female genital organs. Experience has, however, shown that the hard stem may easily give rise to pressure-necrosis in the tender single-layered uterine epithelium which may be followed by ulcerations of the uterus; in some of the cases which were not accompanied by a most scrupulous antiseptis or asepsis at the introduction of the instrument there developed purulent endometritis, metritis, and even infectious peritonitis. In Germany these intra-uterine stems are, on account of the dangerousness of the treatment, no longer in general use. It is only very rarely that we now hear something said in their favour (*E. M. Simons, Kallmorgen*).

A doctor in Magdeburg constructed in 1898 an intra-uterine pessary with two spring ends which were introduced into the uterine cavity in the region of the tube-entrances so as to prevent the falling-out of the stem. He recommended these "obturators" as perfectly harmless and as an absolute preventative of conception. In the trial which is reported in the "Mag-

deburger Generalanzeiger" of April 19, 1902, it was elicited that in a number of cases very severe injury to health resulted from the application of the apparatus in spite of its great praise. (Quoted after *Keferstein*.) Thus the instrument had several times become rusty and got broken so that the ends had penetrated deeply into the uterine wall and caused severe inflammations, etc. Moreover, pregnancy had several times occurred notwithstanding the permanent location of the obturator in the uterine cavity. The doctor in question was condemned for recklessly causing bodily injury to 5 months' incarceration. Many years ago *Olshausen* described two cases in which pregnancy occurred despite the fact that there were pessaries lying in the respective uterine cavities.

The stems present therefore on the one hand a by no means safe protection against conception; on the other they are certainly not without danger to the women wearing them. If their application is dangerous when performed by the doctor and when the patient is under his constant supervision, the chances that most serious injury to health will ensue are considerably enhanced where the women introduce or attempt to introduce such instruments by themselves.¹

Of the other preventive measures, vaginal irrigations employed immediately after coitus, and especially if they are applied too cold, are very often injurious to the female sexual organs. The sudden cooling of the over-congested genital tract may produce metritis, and even oophoritis. On the other hand I have not heard that the well-known "safety-spongelets" or

¹A few weeks ago, a catalogue from a Berlin firm came into my hands in which such a uterine stem is most warmly recommended as being quite harmless and reliable in its effect. An accompanying illustration shows—*horribile dictu*—how "easily and without any risk" the stem may be introduced with the help of a mirror and director into the uterine cavity by the women themselves. That it is exceedingly easy for false passages to be created if the stem is applied by an unskilled hand, or that the stem may under certain circumstances pierce the vaginal wall and enter the peritoneal cavity there to produce septic peritonitis, seeing that under such conditions a careful disinfection of the genitals and of the instrument, is hardly likely to take place, I need only mention briefly. Under favourable circumstances there may occur "nothing more" than an inflammation of the uterus, not to mention the most imperfect reliability that the desired result will be achieved.

vaginal balls (made of cacao-butter impregnated with spermatozoa-killing substances, and introduced into the vagina about half an hour before coitus, where they are allowed to melt) have caused any injury to the health of the women using them. Their innocuousness is, of course, accompanied by a corresponding unreliability as to their action. Vaginal irrigations also have only a limited value, as where the os uteri is at all open semen can be injected direct into the uterus, and irrigations are then of no use. As a curiosity I should like to mention that a gentleman whom I know contracted through the employment at coitus of a vaginal ball, the composition of which could not unfortunately be ascertained, a most obstinate inflammatory rash on his penis which demanded several weeks' medical treatment.

The only reliable anti-conceptional arrangement is the employment by the husband of condoms made of good india-rubber; (fish-bladders enable occasionally the spermatozoa to pass through, as has been shown by investigation.) Injurious results to the bodily health of the wife do not arise from their use, unless the occurrence of the orgasm is thereby hindered in the same way as in interrupted coitus. In the majority of cases, however, the process of the sexual excitement in the wife is disturbed to a far lesser extent through the employment of the other protective measures (occlusive pessaries, protective stems, spongelets, irrigations, safety—oval—condoms). If the use of these appliances occasions an insufficient gratification of the sexual desire, they must on this account be prohibited, seeing that they are capable of giving rise to the same consequential diseases of the genital apparatus as the interrupted form of coitus.

Coitus inter menstruationem.—As regards sexual intercourse during menstruation there are apart from æsthetic and ethical reasons against the practice hygienic motives as well. The over-congested genital apparatus of the wife may under certain circumstances be injured by coitus which causes a further intense increase in the sanguineous discharge. Although the opinion held formerly by many that coitus during menstruation may cause hæmatoceles through the bursting of overfilled blood-vessels, is no longer entertained, there is nevertheless a

possibility of acute hæmorrhagic endometritis occurring in consequence. Then there is no doubt that the entrance of infectious organisms during coitus is greatly facilitated through the wide opening in the os uteri and cervix which accompanies the menstruation period. Generally speaking, the exercise of sexual intercourse during menstruation is therefore distinctly to be dissuaded from.¹

III. Developmental anomalies of the female genital apparatus in their relations to the married state.

a. Hypospadias and pseudo-hermaphroditism.

Hypospadias and pseudo-hermaphroditism possess such a high social significance that we cannot touch these malformations briefly only, but must refer to them at some length.

Hypospadias arises through an arrest of development in the internal sexual organs. Through disturbances in the longitudinal growth of the vagina there is caused an absence of the connective-tissue wall between urethra and vagina which terminate therefore in common as a very short urethra and—frequently closed—vagina into the persistent canalis urogenitalis. The clitoris is at the same time as a rule more or less markedly

¹That there are occasionally cases where the libido sexualis of the wife is present at the menstruation period only, so that the doctor is well-advised in the interest of the happiness of the married life to permit carefully performed coitus towards the end of the menstruation—as rightly recommended by *Kossmann*, p. 249, does not detract from the utility of the general prohibition of intercourse during the period. Such matters can altogether be decided only from case to case by taking into consideration on the one hand the possibility of an injury to health, and on the other the preservation and cultivation of the matrimonial harmony—On the other hand I am not inclined to agree unconditionally with the supposition of *Kossmann* that the psychical depression of women during the menstruation-period rests upon the compulsory sexual abstinence. To my mind a very satisfactory explanation may be found in the numerous physical complaints which characterise the 'being unwell.' Virgins, moreover, in whom there can be no question of sexual intercourse during menstruation, exhibit exactly the same mental depression as women accustomed to gratify their sexual desire.

hypertrophied so that it has become similar in form to the male penis. On the other hand there occur in the male sex as a result of developmental disturbances exactly analogous conditions of hypospadias with clitoris-like atrophy of the penis, absence of the urethra along its course and divided scrotum, so that the latter presents the appearance of the two labia majora. It may in such cases, where the external genitals are so insufficiently differentiated, be exceedingly difficult to decide to which sex the individual in question belongs, since that decision depends solely and exclusively upon the undoubted establishment of the presence of ovaries or testicles, a thing by no means always easy to accomplish. Such individuals with insufficiently differentiated external genital organs in whom therefore the type of sex is a matter of doubt, but who possess either ovaries or testes, are designated as pseudo-hermaphrodites, and we call them male or female pseudo-hermaphrodites according to the real sex to which they are eventually proved to belong.

It is not always a question of a pronounced male or female hypospadias; there are, on the contrary, numerous modifications of pseudo-hermaphroditism. Sometimes the external genital parts and also the general habit of body are distinctly feminine, only the internal parts are abnormal and there are male germ-glands as f. i., in a person who was admitted a short time ago in the gynæcological policlinic of the Charité Hospital.

Miss Sch., servant-girl, 22 years old, presents herself at the hospital in order to find out why she has never yet menstruated. The external genitals show relatively little hair; mons veneris and labia are rather deficient in fat. Clitoris not hypertrophied, the prepuce of the clitoris is well developed, on the other hand the very rudimentary labia minora forming small cutaneous folds, unite into a very puny frenulum clitoridis. Urethra and vagina terminate at the normal spot. Hymen preserved, ring-shaped. Behind it, a cul-de-sac is reached which is only $\frac{1}{2}$ cm. wide and directed upwards. Per rectum no vagina can be felt, and no distinct uterus, but at about the centre of the pelvis only a structure about the size of a cherry. In the region of the external inguinal canal

there are to the right and to the left bodies rather larger than hazel-nuts which cause considerable trouble to the patient and are very sensitive. The patient wants to get married, and she has a decided inclination towards the male sex, though she asserts that she has never practised intercourse, a statement consonant with the condition of the hymen. Pelvis, shape of body, breasts, face, voice and behaviour absolutely feminine. It is assumed with great probability that the two structures in the inguinal regions are testicles, as the one on the left especially gives during palpation the impression of a testicle with epididymis and spermatic cord. Out of consideration for the severe complaints of the patient, the structures are extirpated at the hospital and the microscopical examination (by Prof. *Waldeyer*) proves them to be testicles in an arrested stage of fœtal development.

The significance and practical importance of these malformations is evinced from this quoted case alone. In a number of instances individuals whose germ-glands are masculine are brought up as girls and often marry as such. The opposite condition occurs far more rarely. Fewer female persons are brought up as boys, since pseudo-hermaphroditism affects chiefly the male sex, for which reason we find much oftener men among "girls," than the other way about.

In a not inconsiderable number of cases this imperfect determination of the sex has led to the most deleterious results, such as suicide, severe insanity, tragic family conflicts, extremely unhappy marriages, serious collisions with the criminal law, various crimes and even murder. The interesting work of *Neugebauer* who has up to now collected about 1000 cases of pseudo-hermaphroditism supplies a terrifying picture of the social and forensic significance of the malformation—which is far more frequent than is generally assumed—and of its influence upon the various aspects of every-day life.

From our point of view we have to ask ourselves especially the following four questions:

1. How far is female hypospadias compatible with marriage?

2. What are the consequences if male pseudo-hermaphrodites marry as women, or vice-versâ if female pseudo-hermaphrodites marry as men?

3. How can such mistaken marriages on the part of pseudo-hermaphrodites be prevented?

4. What do we know with regard to the hereditary transmission of hypospadias and pseudo-hermaphroditism?

Ad. 1. Hypospadias in a person of the female sex, that is, in an individual in whom ovaries are demonstrably present, presents a number of factors which must be regarded as obstacles to marriage. For, as a rule with the malformation considerable developmental disturbances of the female genital organs are associated, so that sterility is bound to result as a consequence. If, as it is generally the case, there is an atresia vaginae, cohabitation becomes at least very difficult; the urogenital canal is, however, in such cases capable of becoming, through frequently repeated attempts at intercourse, considerably dilated and serviceable for coitus, though the act is usually very painful. The urethra is also frequently utilised for purposes of cohabitation and becomes thereby considerably dilated. If the clitoris is very much hypertrophied, it may cause an obstruction during coitus which can, however, be removed by operation. The consent to a contemplated marriage can therefore at all events be given only after a clear intimation that sterility must be anticipated and after an explanation of the difficulties which will most likely be encountered in any given case during the performance of the sexual act.

Ad. 2. There exist so far quite a number of observations of marriages between two men. (*Neugebauer* has collected 51 cases.)

The "wives" were male pseudo-hermaphrodites who through a mistake as to their real sex, were brought up as girls and eventually given in marriage as such. *Neugebauer* is, however, probably right when he says that there must be considerably more cases of this kind than one would think from the number published. Sometimes the mistake in the sex is not found out at all, in other cases it is kept secret so as to avoid a scandal and unpleasant gossip. Particularly such cases as the

one described above can easily be overlooked and result in men marrying as women.

It is interesting to study the sexual feelings of these men married as women. They present all sorts of variety. In most of the cases the individuals concerned were indifferent, showing neither for men nor for women any inclination whatever. In some of them, however, there was a decided and deep feminine attachment towards the husband as for instance in the following case of *Winter*.

Male pseudo-hermaphrodite, 23 years old, of proper feminine nature. "Her modesty, her female reserve, her almost attractive appearance do not raise in the unprejudiced observer any doubts whatever as to her female type." The case is one of hypospadiasis peniscrotalis; the penis is not larger than an ordinary clitoris. The girl had formerly had libidinous dreams, and dreamt about men. She loved her intended husband and expressed an ardent wish to cohabit with him.

This inclination towards the male sex can remain in a male pseudo-hermaphrodite in spite of his being enlightened on the subject of his real sex. Others, again, experience in agreement with their proper state a sexual desire for women exclusively, and "hate all men."

Finally there are pseudo-hermaphrodites who are equally fond of intercourse with women as with men, in whom there is consequently a simultaneous sexual inclination towards both sexes.¹

That most serious conflicts can result from the natural sexual feelings of male pseudo-hermaphrodites erroneously married as women, is very evident. Thus in a number of cases the

¹Translator's note: In my boyhood I knew an individual who often assured me that he alternated between being a man and being a woman. He would be a man for 4 weeks during which time he was capable of intercourse with women, and the next 4 weeks he would be a woman capable of intercourse with men. I looked upon him at the time partly with great awe and partly with incredulity, but what he told me was probably true. He must have been a pseudo-hermaphrodite with a sexual inclination towards either sex. He died long before I could have asked him any questions involving an understanding of the condition.

unhappy victims of the mistake were driven by their desire for women to commit acts of infidelity, and several times some of these "wives" have actually impregnated other women!

Where male hypospadias is present, the exercise of sexual intercourse is naturally as much impeded, or even more so, as in the case of female hypospadias. Cohabitation is in such cases frequently impossible and often very painful, but prolonged attempts at coitus occasion here also gradually, partly a dilatation of the urethra so that the husband's penis finds its way into it, and partly a vagina-like inward pushing of the soft parts. Where, however, the external genitals are approximately of a feminine type so that the entrance of the penis is not altogether prevented, and where the vagina is at least a few centimeters long, cohabitation does not present very great difficulties.

It is chiefly the difficulty in the performance of coitus which brings the husbands in question to the doctor. In other cases the absence of menstruation or sterility calls for medical advice. In others, again, the husband discovers immediately after the wedding that his "wife" is not built like other women and demands the dissolution of the marriage.

As a matter of fact in a number of such marriages the union has been dissolved on account of the male sex of both contracting parties. More rarely it has happened that both sides decided on finding out their mistake, to leave matters undisturbed and not to insist upon a change in the determination of the sex.

Cases of marriage between two women, that is, where female pseudo-hermaphrodites have married as men, are far more rare. Against 51 marriages between two men *Neugebauer* could find only 5 between two women. This is in perfect agreement with the observation that pseudo-hermaphroditism is far more frequent in male than in female individuals. It is not possible to draw any general conclusions from the few cases reported.

Ad. 3. The number of such disastrous mistaken marriages in consequence of a wrong determination of the sex can be reduced materially by entrusting the interpretation of possible abnormalities at the external genitals, soon after the birth of the child, to experienced physicians familiar with the subject of malformations. Moreover, the complaints of homo-sexual

or absent sexual sensation, and also the absence of the signs that the female or male organs of generation are acting normally (menstrual hæmorrhages, molimina menstrualia, erections, ejaculations, emissions) ought never to be treated as having no practical importance, and dismissed with such remarks as: "It will all come right in the end,"—"It is all due to chlorosis," etc., but should receive careful attention and consideration at the hand of competent observers.

The following points are decisive in each individual case:

If hypospadias is present in a newly-born child, and nothing can be felt of testicular or ovarian structures, the determination of the sex is impossible; nothing definite can be said, and the parents must be told to wait. If oval bodies are felt in the supposed two scrotal halves or in the inguinal region, they may be testicles or displaced ovaries. Only when an epididymis and spermatic cord can be felt with certainty near the main body of the structures, is it possible to decide in favour of the "male sex." But where the external genitals show female character, and the germinal glands situated in the abdominal cavity are masculine there is nothing to point to pseudo-hermaphroditism.

On reaching maturity the male pseudo-hermaphrodite who has hitherto been brought up as a girl notices sometimes for himself certain signs which cause him great surprise. Instead of menstruation there occur nocturnal emissions, the voice assumes a male character, the beard begins to grow in profusion, in the place of the regular heterosexual desire for man there develops a more or less violent inclination towards women, or the sexual sensation does not become manifest at all. These doubts as to their own sex have been known to arise sometimes even in such "girls" whose genital organs presented externally no abnormalities whatever, and who could not therefore have been influenced in their thoughts by any malformations in the sexual region. It is chiefly the absence of menstruation which frequently constitutes the main cause of the question whether a certain person may marry or not.

Complaints of this sort must always suggest the idea that a male pseudo-hermaphroditism is possibly the cause of them. The "girl" in question can with certainty be declared to be a

man if spermatozoa are demonstrated in the ejaculated fluid, or if testicle, epididymis and spermatic cord can incontestably be ascertained by palpation, no matter whether they lie in the supposed scrotal halves or in front of the inguinal canal. But if semen cannot be demonstrated, and if testicle-like or ovarian-like structures cannot be felt at all, or if they cannot with certainty be pronounced to be male germ-glands with epididymis and spermatic cord, as for instance when they are rudimentary, it is only possible to make a definite and incontestable pronouncement after a diagnostic operation—scrotal, inguinal or abdominal section, according to position—with which it is best to combine an excision of a small portion for microscopical examination.

Everything else is deceptive. No doubt marked feminine sensation will hardly permit the thought that the individual in question is a man; but we must remember that education plays here a very great part. The following case of *Berthold* among others, is very instructive in this respect:

A male pseudo-hermaphrodite, aged 22, who was brought up as a girl consults Prof. *Berthold* on account of hoarseness. "She" is a shy girl who becomes confused and blushes when asked about her inclinations towards one sex or the other, and she refuses at any price to allow her body to be examined again. *Berthold* reveals to her the mistake made as to her sex, and she does not at first wish to believe it. Seven years later, however, she begs Prof. *Berthold* to assist her in changing her sex; the shy girl assumes now quite a different behaviour and appears as a fine young fellow who has no objection to being shown at a large medical gathering or to being examined and photographed.

How careful one must be in determining the sex even when all the secondary sexual characteristics, general build, pelvis, larynx, voice, growth of hair, psychical peculiarities, etc., are feminine, is clearly shown by a case of *Pollailon*:

Girl, 23 years old, with imperfect vagina. External pudenda perfectly female. On each side in the inguinal canal a structure the size of a hazel-nut. Gen-

eral appearance, feminine; inclination towards men. It is therefore assumed that she is a woman with rudimentary ovaries. The post-mortem shows afterwards these bodies to have been testicles!

The same thing was observed by myself in the above-described case of Miss Sch.!

If in the course of time and development it is still impossible to arrive at a definite decision, one may yet sometimes do so subsequently without operation when the testicles have descended and when they can be distinctly felt as such.

That an individual is a female pseudo-hermaphrodite we can conclude with certainty from the occurrence of periodical hæmorrhages from the sexual organs or from the presence of ovaries. But the interpretation of such menstrual hæmorrhages requires the greatest circumspection; hæmorrhages from the urethra and hæmorrhages through cohabitation-injuries have been mistaken for menstruation; in some cases the persons in question asserted that they had regular hæmorrhages so that they might remain women. It may sometimes be necessary to perform a diagnostic operation in order to establish the presence of ovaries.

Ad. 4. That hereditary elements play a certain part in the origin of hypospadias and pseudo-hermaphroditism we learn from the literature. *Neugebauer* collected 2 years ago 45 observations of hereditary transmission of this malformation or of its occurrence in several members of the same family. Of particular interest is the communication of *Lingard*: transmission of hypospadias from father to son through six generations. The point is therefore not without significance from the standpoint of a contemplated marriage with a hypospadiac man.

b. Congenital rudimentary state of the uterus.

The rudimentary uterus is met with in combination with a rudimentary vagina. The uterus is usually represented by a small longitudinal solid body, the ovaries are sometimes perfectly developed, but generally smaller than is normally the

case. The external parts show sometimes the physiological constitution. Generation is, of course, out of the question in such cases, and menstruation is also absent. Where the ovaries are functionally capable there may however occur considerable menstrual complaints. The absence of the menstruation brings these girls often to the doctor. It is in these cases particularly necessary to be on guard against confusion with male pseudo-hermaphroditism of which one should always think in defects of the uterus and vagina. Search must be made in the labia majora and in the inguinal canal especially, for possible testicles, for the presence of further malformations of the clitoris, of the labia minora and of the urethra. (Compare with the case observed by me and described above under "Hypospadias and Pseudo-hermaphroditism.")

The certainty that the marriage will prove sterile ought really to be a reason against allowing it, its aim being the propagation of the species; there is, besides, the fact to reckon with that the absence or insufficient length of the vagina renders intercourse very difficult or impossible. Still, there is no real objection if the future husband decides to marry the girl in question despite his being aware of her incapacity for conception or of the difficulty which cohabitation is likely to encounter, especially if her sexual desire should be, as is frequently the case, quite normal; the rudimentary vagina becomes through frequently repeated coitus after some time sufficiently dilated in a number of the cases. The urethra, too, has frequently been made use of for cohabitation under such circumstances. Plastic operations have recently been performed occasionally, and not without success, for the purpose of forming an artificial vagina, but the operation is so far not without dangers and too uncertain in its effect, to merit general recommendation.

c. Duplication of the non-rudimentary uterus.

The various forms of the double uterus, produced by insufficient or totally absent union of the two Müller's ducts, influence the possibility of cohabitation in very rare cases only. In

double vagina the dividing septum may occasionally create difficulties on account of its size, as in the case of *Dirner* in which it had to be removed by operation. Frequently in double vagina only one side is dilated and used for sexual intercourse. This happened also in a case of uterus duplex bicornis bicollis with double vagina which I had occasion to see in the policlinic of the Charité, and in which the septum ran quite extramedially and was lying closely against the left wall of the vagina.

Conception is also not prevented ; it may even happen, as it has several times been observed, for pregnancy to develop simultaneously in both halves of the uterus. In such a case the two embryos may even be expelled at different times and with a long interval in between. (*Peter Müller.*) Labour may take place quite normally, but it may also exhibit displacements of the presenting fetal part and their consequences on account of the occasional lateral position of the pregnant half of the uterus. Uterine inertia has also been observed as a result of the imperfect development of the uterine muscles.

The septum in the vagina seldom gives rise to difficulties. It generally gets torn during labour by the descending fetus, or at least pushed aside; sometimes it may need dividing. "Disturbances do occur repeatedly, but they are not of any serious importance." (*Pfannenstiel.*)

d. Uterus unicornis with rudimentary second horn.

The uterus unicornis hinders neither coitus nor conception. If pregnancy occurs in the fully-developed horn, its course is like in double uterus. A most disastrous effect may, however, result if the impregnated ovum settles and begins its development in the rudimentary horn. The issue is generally a rupture of this thin-walled second horn with consequences similar to those resulting from the bursting of a pregnant Fallopian tube. The question of consent to a contemplated marriage is hardly likely to arise in this connection; there are no symptoms calling for medical help, and the malformation is generally discovered later on unless there are also other anomalies or complications of some sort.

e. Imperfect development of the uterus.

The imperfect development of the uterus occurs in two main forms. There is first an arrest of the uterus at a stage of development corresponding to the uterus of the fœtus in the last months of the pregnancy: uterus fœtalis. In this form the cervical portion is twice as long as the body of the uterus, which is very small, and the whole uterus is considerably shorter than normally; the ovaries and the pubic hair are generally also poorly developed.

Or there may be an infantile uterus, that is, one which has not grown during childhood. Here the relative proportion between the size of the cervix and that of the body of the uterus is the same as normally, but the whole uterus is much smaller than ordinarily and forms so to speak a miniature uterus. There are transitions between the two forms.

The markedly fœtal uterus is incapable of menstruation, and impregnation is equally impossible. The ovum cannot settle in the imperfectly developed uterus. But though the women in question are sterile their sexual desire or pleasurable sensation is not necessarily disturbed. The opinion of *Küstner* that such women are devoid of every particle of sexual excitement does not meet with my approval. I have repeatedly examined women of this sort in whom the sexual excitability was perfectly normal, and *Nagel* goes so far as to maintain that it may be present in a higher degree. Personally I cannot, however, say that I have seen cases of this latter class. That the sexual desire may also be absent, goes without saying; does it not happen that it is absent also in women who are normally built and in possession of perfect sexual organs? The conjugal intercourse can as a rule be performed without difficulty, an occasionally occurring too short or too narrow vagina soon adapts itself to the size of the respective male member.

In those cases especially where in the place of menstruation more or less severe and painful spasms in the abdomen occur at intervals of 3-4 weeks, exactly the same troubles are occasionally observed in connection with cohabitation.

A subsequent further development is in the case of an unmistakably fœtal uterus out of the question; women with such wombs are therefore condemned to permanent sterility. This point is naturally of immense importance to the question of the consent to a marriage which can only be granted after a full explanation of the real state of affairs. It is also not without importance to remember in this connection that organs which have remained at a low stage of development, are on the whole more liable to be attacked by disease than normal and well-developed ones.

The situation is rather better in infantile uterus. In the slighter cases particularly, in which menstruation is present though it is inconsiderable, of short duration and occurring at long intervals, a decidedly favourable alteration takes place sometimes after marriage. Frequent cohabitations can influence a subsequent further development by means of the strong hyperæmia which they occasion in the genital apparatus, so that the uterus approaches gradually the conditions present in the healthy woman and begins to menstruate regularly.

In such cases there is naturally also a possibility of conception although it frequently does not take place for some time after marriage and without the influence of medical treatment of various kinds. Generally speaking, it is possible to draw certain conclusions with regard to the sterility from the behaviour of the menstruation. The more normal the latter the less likely it is that the woman in question will remain sterile; where menstruation is absent entirely, sterility may be looked for. In this case, however, there are generally transitions to fœtal uterus.

In considering therefore the question of consent to marriage the state of the menstruation is the decisive element. In abnormally slight and rare discharges which have commenced several years later than normally, the chances of a fruitful marriage are very small. In other cases the consent may be granted with the proviso that sterility is a fact to be reckoned with. Suitable treatment with the object of producing a more active circulation of the blood in the pelvic organs can, however, under certain circumstances be of very great usefulness. As general

remedies we may recommend cycling and horse-riding so long as there are no contra-indications; of local applications I have derived most benefit from the electrification of the uterine cavity with the galvanic current. I need hardly mention that the chlorosis which is very often present in these cases requires most careful treatment.

Where pregnancy occurs, the labour proceeds sometimes abnormally slowly. The poorly developed uterus does not contract sufficiently, the pains are very slight and troubles arise therefore occasionally also in connection with the after-birth period.

IV. Retroversion, retroflexion and prolapse of the uterus and vagina.

In the following discussion on the retroflexion of the uterus in relation to the married state we shall consider on the whole only the cases of uncomplicated displacement. Where more or less severe inflammatory changes (catarrh of the uterus, inflammation of the peritoneum, disease of the tubes and ovaries), alter the clinical picture, the procedure of the physician will in the first place be dictated by these complications. We may therefore apply to complicated retroflexion what has been said with regard to the inflammatory diseases.

The origin of retroversion—flexion in the puerperium.—A large number of gynaecologists see the principal cause of retroflexion of the uterus in the puerperium, and especially in one which was badly managed. One of the most important events of married life would therefore play a considerable part as an etiological factor in this sort of displacement.

For keeping the uterus in its right place there are, besides the pelvic floor and the perineum, several ligaments: tense bands of connective tissue which proceed laterally from the cervical portion to the pelvic wall, the round and the posterior uterine ligaments. They maintain the uterus with its fundus directed upwards and forwards and with its cervix downwards and backwards, and they at the same time tend to keep it in

the middle position of the body and at a normal height. But if the uterus happens for some reason, f. i., through an over-filled bladder, to lie in a position of retroversion, it will retain this changed position if its wall-apparatus has in any way suffered, if the round ligaments are too weak to pull the fundus forwards, if the sacro-uterine ligaments are so relaxed that they cannot direct the cervix posteriorly.

How does this relaxation of the ligaments come about? In this way: The elastic and connective-tissue attachments of the uterus are considerably stretched during pregnancy. With the rapidly growing uterus the ligaments inserted into it, grow only to a certain extent, so that they are partly drawn upwards and over-extended. After the expulsion of the fœtus and the great diminution in the size of the uterus resulting therefrom, the ligaments will have become too long and too lax. Still, the uterus is during the puerperium kept in a marked position of ante-flexion, particularly by the energetic contraction of the round ligaments which have become hypertrophied during the pregnancy. Now, if these muscular attachments of the uterus have lost much of their strength through the puerperal disintegration, as it is usually the case, and the elastic and connective-tissue ligaments have not yet regained their former tension, "the critical moment arises which is favourable for the development of a retroflexion after the puerperium." (*Schulze*.)

An insufficient diet during the puerperium is frequently regarded as a particularly aggravating cause. If the parturient woman gets up too soon or if she has some hard work to perform, severe injury may be caused to the sexual organs. The process of evolution is disturbed and permanent relaxation ensues.

Besides, the puerperal processes act sometimes in another way too, namely, by creating inflammations which weaken the supporting apparatus temporarily or permanently, through the formation of adhesions between the uterus and the posterior pelvic wall, etc.

Some authors, f. i., *Küstner*, deny that what is generally regarded as a premature getting-up after child-birth can constitute a cause of backward dislocation of the uterus. There

is at any rate no doubt that a large number of retroversions and retroflexions which are ascertained for the first time during the puerperium are not puerperal in origin, but have already existed before, and have only come under medical notice on account of the complaints becoming sufficiently aggravated to attract attention. Gynæcologists who examine many virgins and nulliparæ, know how frequently these displacements occur among them.

Origin of prolapsus uteri et vaginae during the puerperium.—Prolapse, too, owes its origin as a rule to the puerperium. After labour the vaginal entrance is widely open, the vagina itself forms a movable and flabby canal, the pelvic floor is relaxed, its power of resistance and its elasticity are at first highly diminished, while the voluminous puerperal uterus rests upon it.

Now, if the puerperal woman gets up too soon, before the soft parts have to a certain extent regained their tonicity, the exertion of the abdominal press can easily expel the lower segment of the anterior vaginal wall. Soon afterwards there appears also a portion of the posterior wall and the descended vaginal walls pull down in their turn the uterus to which they are attached. The occurrence of the prolapse is very much facilitated by the absence of the perineum, and consequently by unsutured or unhealed perineal ruptures. Whereas normally the abdominal pressure simply pushes the anterior vaginal wall towards and upon the posterior one which possesses a strong support in the tough and wedge-like inserted perineum, the anterior vaginal wall is, in case the perineum is absent, forced directly downwards because it is deprived of its support. If the abdominal press of the puerperal woman is strongly taxed during defæcation and micturition, considerable aggravating elements are thereby created.

Prophylaxis of displacement and of prolapsus uteri et vaginae.—The prophylaxis of backward displacement and of uterine and vaginal prolapse presents in the puerperium a grateful field.

In the first place, every perineal laceration, no matter how small, requires the most careful suturing. A fortnight's rest

in bed is imperative, but the dorsal position should not be continued for longer than the first 8 days. It is further necessary to see that the bowels act easily so that the abdominal press should not be unduly requisitioned. The bladder must be evacuated during the day at regular intervals of about 3 hours, otherwise it will when overfull, press the vaginal wall downwards and the uterus backwards. Severe manual labour should not be permitted at all before involution is complete, that is, not before the lapse of 6-8 weeks. If signs of prolapse become manifest, or if a retroversio-flexio is ascertained by the corresponding symptoms it is advisable to introduce a pessary at an early stage. A longitudinally-oval S-shaped celluloid ring is placed in the vagina with the most scrupulous regard to asepsis. If the vagina threatens to descend, a firmly-drawn T-bandage and especially the introduction of tampons impregnated with glycerine of alum promise the best results.

Cohabitation in retro-version-flexion and prolapse.—Cohabitation is, generally speaking, not hindered either by retro-version-flexion of the uterus or by prolapse of the uterus and vagina. Where the vagina lies to a considerable extent in front of the external genitals, the parties concerned usually replace the prolapse before performing coitus, or else the male member itself brings about the reposition of the prolapsed parts. Neither do the pessaries introduced by doctors for the purpose of supporting the uterus and vagina in their right places, as a rule disturb the conjugal intercourse very much, provided, of course, that they lie properly, that they are made of the proper material and are adapted to the size of the vagina and other prevailing conditions. Rare forms of pessaries, hardly ever employed at the present day, *f. i.*, rings in which a wide shaft narrows the vagina and projects out of it, do not permit the performance of regular intercourse. But the thought that a pessary is lying in the vagina of the wife occasions in some husbands such disagreeable sensations that this circumstance alone is often the influencing factor in the decision to undergo an operation, the consent to which could not otherwise be obtained. Cohabitation is further indirectly prevented by rings made of soft rubber, or of copper wire, covered with

rubber, not so much on account of the obstacle which the foreign body opposes to the entering penis, as on account of the malodorous discharge which the application of these rings soon causes and which is sufficient to deter from conjugal embraces. For æsthetic reasons alone, the use of this material should therefore be discontinued, not to mention the injury to health which the purulent secretion can give rise to.

The affections with which we are dealing cause no pain during cohabitation even if a pessary is lying in the vagina; where pain is thereby engendered, the ring is either not situated properly, or else the case is not merely a retro-version-flexion or prolapse but rather a complication with catarrh of the uterus or with inflammation of the pelvic peritoneum, of the pelvic cellular tissue, of the tubes or of the ovaries. Whilst the conjugal intercourse in uncomplicated retro-version-flexion and prolapse does not need any restriction, no matter whether a pessary is introduced or not, the above-mentioned diseases alter the standpoint of the medical adviser entirely; in that case we must be guided by the principles which are laid down in the chapter: "Inflammatory diseases of the genital organs in relation to marriage."

Sterility in retro-version-flexion and prolapse.—Opinion is divided as to whether a simple retro-version-flexion is to be regarded as the cause of an existing sterility. While some authors deny *in toto* that there is here any causal connection and maintain that in retro-version-flexion and sterility the unfruitfulness depends upon some other genital disease, such as uterine catarrh, or other inflammatory processes in the pelvis, or possibly upon an affection of the husband, others do not feel inclined to withhold this influence absolutely from the simple uncomplicated retroflexion. Thus *Winter* also points out that in high degrees of retroflexion the abnormal forward position of the external os uteri hinders the entrance of the spermatozoa, and thus possibly the occurrence of conception. In women who have not yet had children the pronounced bend of the uterus backwards produces a further element rendering conception difficult, by narrowing still more the already narrow cervical canal and internal os.

At any rate we do see occasionally that pregnancy takes place subsequent to the removal of a simple retro-version-flexion after a sterility extending over many years, and namely so shortly afterwards that it can hardly be said that some other concurrent disease has in the meantime become healed. It cannot in these cases be straightway denied that the disappearance of the mechanical disturbances described above, and perhaps the fact that the tubes which have hitherto been displaced and bent posteriorly along with the uterus have again become passable, were instrumental in producing a rapid impregnation. The following case of *R. Braun v. Fernwald* is interesting in this respect:

In a lady who was suffering from a congenital retro-flexion, the uterus was on account of her sterility raised and maintained by a pessary in its normal position. Shortly afterwards, conception. After the puerperium the uterus became again retroflected. There was again an absence of conception until the uterus was again raised. Since then, the patient has her uterus raised whenever she wants to have a child, and she becomes pregnant immediately.

In by far the great majority of cases, however, there is no doubt that these mechanical factors are not accountable for the sterility of the marriage, but that the latter is due to some complication.

This applies even to a greater extent to prolapse. The prolapse of uterus and vagina cannot be a cause of sterility, since during or before cohabitation the prolapsed soft parts are replaced into the pelvis, so that the spermatozoa are not at all prevented from entering comfortably. Where sterility is present in association with prolapse of the genital organs the cause lies as a rule, if it is in the wife at all, in the simultaneous disease of some portion of the genital canal.

Retro-version-flexion in its relation to pregnancy, labour and puerperium.—If the impregnated ovum settles in a retroverted-flected uterus, 3 issues are possible. By far the most frequent is also the favourable: The pregnant uterus raises itself up, grows out of the pelvis, and

pregnancy and labour take an undisturbed course. In fact this is, as *Chroback* especially has pointed out, the almost regular issue in retroflexion. Or else the uterus remains with its body in the sacral curvature. In that case miscarriage may take place. Retroflexion-version was formerly regarded as a very important etiological factor in the causation of miscarriage. But since the investigations of *Winter* and others it behoves us to be very careful in the interpretation of these cases. Finally, it is also possible, if neither spontaneous elevation nor miscarriage occurs, for the pregnant uterus to become jammed in its further growth against the hollow of the small pelvis. If assistance is not quickly forthcoming, this condition presents an exceedingly great danger which may imperil to the utmost the health of the sufferer or even cost her her life. There ensues in the course of the incarceration an impossibility to evacuate the bladder on account of the displacement of the urethra, an infection of the urine retained in the bladder, gangrene of the bladder, death from rupture of the bladder with subsequent septic peritonitis, suppurative pyelo-nephritis, pyæmia, etc.

If therefore in the course of pregnancy the uterus is found to lie in retro-version-flexion, it must be raised with the hand as carefully as possible and kept in position by means of a pessary which must be left inside until the middle of the 5th month so as not to allow the uterus to fall back again.

A different procedure is indicated if there are already symptoms of incarceration. Here the attitude to be adopted depends entirely on the condition of the bladder. If the situation is favourable, namely, enormous dilatation of the bladder with impossibility to pass urine but without signs that decomposition has already commenced, the bladder is simply evacuated carefully by means of a male catheter, and this manipulation is immediately succeeded by a very cautious elevation of the pregnant uterus and the introduction of a pessary-ring. But if there are already signs of gangrene of the bladder, and if the urine is purulent, the more advisable course is to open the bladder from the vagina in order to permit a sufficient discharge of the gangrenous masses, a proceeding recommended by

Pinard and *Varnier* and supported also by *Bumm*. In these cases the elevation of the uterus must not be attempted; this might result in the laceration of the already injured tissue of the bladder and also of the uterus. Here abortion must be instituted, and this must also be done in those cases where the reposition cannot be effected notwithstanding all the measures adopted. If artificial abortion cannot be performed cautiously the uterus must be punctured from the vagina under most careful asepsis, whereupon labour pains usually begin very soon.

If in a pregnant woman retention of urine or even dribbling of urine (*Ichuria paradoxa* with the bladder overfull) occurs in the first half of the pregnancy, there is a very great probability that incarceration of the uterus lying in retro-version-flexion has taken place, which may if allowed to proceed further, lead to the death of the woman. This is a sentence of the greatest importance to every-day practice!

Prolapse of the uterus and pregnancy, labour and puerperium.—Slight prolapse of the vagina has no influence on the course of pregnancy, labour and child-bed, apart from the circumstance that in some cases the rapidly growing uterus causes the sense of heaviness also to be felt in a higher degree. The introduction of a suitable pessary removes this disturbing sensation at once, and if the apparatus is situated properly the continuance of the pregnancy is not in the least interfered with.

Similarly if the uterus itself is also partly prolapsed, the course of the pregnancy is usually a favourable one. If the uterus, in agreement with the increase in its size, ascends upwards from the small pelvis, the change of position disappears and the rejoicing patient imagines that she is relieved of her complaints. Unfortunately, however, the uterus sinks again at the termination of the pregnancy, and on account of the renewed relaxation of the tissues the prolapse is sometimes even more pronounced afterwards than before.

Where no spontaneous elevation of the uterus takes place, artificial reposition of the prolapsed parts into the pelvis becomes, of course, necessary. If the prolapsed parts are much

swollen, the manipulation of reposition must occasionally be preceded by a few days' rest in bed. A suitable pessary-ring is then introduced, which keeps the uterus permanently from sinking downwards again. At any rate miscarriage or premature labour may occur here, too (17% of the cases, *Bentner*), if spontaneous reduction does not take place and no artificial reposition is performed, especially where the uterus is at the same time in a position of retro-version-flexion.

The process of labour is on the whole very little endangered. Of course, if the cervix is highly hypertrophied, chronically inflamed and indurated, the dilatation-period lasts sometimes very long and may necessitate a more or less active interference of the medical attendant—but such cases are comparatively rare.

Permission to marry.—It is only rarely that one has an opportunity of expressing an opinion whether displacement or prolapse constitutes to a certain extent an obstacle to a projected marriage. Such anomalies are not often seen in virgins. It is true that retro-version-flexion is in their case also more frequent than it was formerly supposed, but it does not get diagnosed as there are no complaints calling for an internal examination; it is only during the puerperium that these complaints arise first. But where complaints are made, and an exploration reveals an uncomplicated retro-version-flexion, it is permissible for obvious reasons to postpone the correction of the displacement until after the consummation of the marriage where the interval is not a very long one; there is at all events no justification for prohibiting the marriage in the absence of complications and other changes, seeing that the prognosis of malposition is on the whole favourable. If there are inflammatory changes associated with the pathological position of the uterus, they will naturally claim the first interest. The retro-version-flexion must then be relegated to a secondary place, and the attitude of the physician will depend on the degree and form of the inflammatory symptoms. (See chapter on Inflammations.)

If a somewhat extensive prolapse is present in a virgin, the necessity of an operation must be pointed out. There are sev-

eral reasons for taking this step before the consummation of the marriage, but it is certainly justifiable to wait until after that event, as long as the future husband is agreeable to it. The prolapsed parts must then, if only for æsthetic reasons, be retained in position by means of a pessary until the operation is performed. In slight prolapses palliative treatment by means of pessaries is, it is true, justified, but here also an operation is very desirable especially if the woman in question wishes to enter the matrimonial state completely cured. It is consequently advisable to tell the patient that a definite disappearance of the troubles can be expected from an operation only, and that it is as a rule preferable for this reason to effect the removal of the prolapse before the consummation of the marriage.

V. Inflammatory diseases of the genitals in relation to marriage.

The import of marriage in the origin of inflammatory affections of the genitals.—It is a generally recognised fact that married women contribute to "abdominal diseases" an unequally greater contingent than virgins. It is just the inflammatory genital alterations which are the peculiar consequences of those injuries which virgins escape, and which seem to attack married women with full force, either because virulent gonococci are during cohabitation transplanted onto the mucous membranes of the female genital tract, producing all the sad consequences of the infection, or because the conjugal intercourse as such gives rise to proliferation processes in the genital organs,² or finally because the conjugal cohabitation has led to conception and in this way brought

¹Gonorrhœa of the female genitals is here simply taken notice of, but not discussed in detail as the subject is fully dealt with in a chapter of *Neisser's* article: "Gonorrhœal Diseases in Relation to Marriage." A few special pages have been devoted to the tuberculous diseases of the genital organs.

²See the 2d section of this article where the inflammatory diseases of the genitals have received detailed consideration in so far as they are produced by abnormal conjugal intercourse.

within the range of possibilities injuries through the activity of the procreative faculty. This does not, of course, mean to say that inflammatory processes at the genital organs are always the consequences of these "conjugal injuries;" there are also numerous other influences which play a part, but which we cannot discuss here in virtue of the limitation of our subject.

That pregnancy *per se* favours the formation of a metro-endometritis has not hitherto been shown to be probable by any demonstrable facts; the cases in which an inflammation of the decidua during pregnancy has been brought about by the invasion of infectious organisms (*Donath, Emanuel, etc.*), possess so far only the value of interesting curiosities, but they have no real practical importance. If there are any signs of metritis in a pregnant woman, it is generally a case of disease which was already existent before impregnation.

Greater importance, however, attaches to the act of expulsion of the fœtus, no matter whether it is the birth of a ripe child, or a prematurely interrupted pregnancy, abortion, miscarriage or premature labour. There is no need from our present point of view to take into account the numerous disastrous infections which lead through the medium of a diseased genital apparatus to general illnesses or loss of life. Those cases especially are of importance to us, where an infectious injury of the genitals during labour—caused by insufficient asepsis at the management of the confinement—is succeeded by invalidism extending over months and years, where more or less serious inflammatory tissue-changes have remained behind after the surmounting of the acute stage, changes which deprive the unhappy women of health and vitality. To this category belong inflammations of the ovaries, of the tubes, of the pelvic cellular tissue, and of the pelvic peritoneum covering the genital organs, especially the uterus itself. Although in some cases absorption of the inflammatory masses takes place comparatively quickly, and a return of the injured parts to their normal condition ensues, the after-effect is nevertheless very frequently of much longer duration. Even after the apparent decay of the infectious agents the organic changes caused by them lead to a deterioration of the sexual function, to acute pain, to distant

effects on other organs and systems of organs, and sometimes to complete infirmity of the woman.

Similarly, infections which have arisen in the course of the puerperium can, of course, also produce the described inflammatory diseases.

I wish to call here particular attention to the unfavourable influence which the puerperal state frequently exercises upon an existing gonorrhœa. The infection generally dates from a period prior to the pregnancy, but the symptoms had hitherto remained mild, there had been no more than a slight discharge from the cervix, which was, perhaps, the only part affected, and the patient had most likely devoted but little or no attention at all to this manifestation. But the gonorrhœal causative agents find in the lochial secretion an excellent soil; they multiply intensively and with great rapidity. The pronounced patency of the cervical canal and of the internal os facilitates the upward motion of the organisms, and thus there often ensues an early joint affection of the higher genital parts, that is, of the uterus, tubes and pelvic peritoneum. Henceforth severe symptoms make their appearance, the affection of the body of the uterus and of the tubes signifies the commencement of the woman's sufferings where she had hitherto hardly known anything of her infection. It often enough means the beginning of many years' invalidism, sickness, inability to work and to enjoy life, and a condemnation to future sterility. It is chiefly the latter part of the puerperium, the time when the woman is already on her feet, that is particularly predisposed to the ascending of the process, and for this reason it is well to enjoin in the case of women with demonstrable gonorrhœa, the most careful nursing and looking-after during their child-bed period, rest in bed until the complete involution of the genitals, that is, the lapse of the 6th week, and the strictest avoidance of all violent movements.

Inflammatory proliferation-processes arise as a rule in the puerperal period more frequently on a non-bacterial basis.

The retention of decidual remnants in the uterine cavity after a labour or miscarriage, and slow, insufficient involution of the genital organs play here the principal part. Of course,

the whole decidua vera can sometimes remain behind and still cause no inflammation, in which case there takes place a gradual transformation into normal uterine mucous membrane (Winter). In other cases, however, remaining decidual shreds are capable of occasioning inflammatory proliferations of the uterine mucous membrane.

If the involution of the genitals does not take place in the ordinary rapid manner, as is the case, for instance, after injudicious conduct on the part of the puerperal woman, after premature getting-up, bodily overexertion, etc., the result of the badly managed puerperium is often inflammatory proliferations in the mucous membrane and muscles of the uterus, as well as in the ovaries, on account of the excessive and long-continued-vascularity of the tissues.

In a slightly devious way the puerperium leads further to inflammations of the uterus and ovaries, through the facility which it provides for the occurrence of displacements, and especially retro-version-flexion of the uterus. The malposition of the broad ligaments posteriorly, with the consequent constriction of the uterine veins causes in the opinion of many authors a congestion in the uterus and chronic proliferative conditions in the same.

Prophylaxis of the inflammatory changes during labour and puerperium.—The physician who has to conduct a confinement and its subsequent puerperium can do a great deal towards averting the inflammatory affections. First of all, it is necessary to keep away from the genital canal of a woman in labour all pathogenic organisms. It would greatly exceed the limits of this book if I were to enter into details. Only a doctor who does not realise the importance of his great responsibility will approach a confinement without carrying out, in every detail and most scrupulously the disinfection of his own person and that of the parturient woman. I need only briefly mention in addition that the same care and precaution is requisite during the puerperal state, the same scrupulous control of the nursing attendants with regard to asepsis and with regard to the absolute necessity of sterilised undersheets, diapers, etc.

A satisfactory involution of the genitals must be aimed at by an early administration of ergot, and particularly by the injunction to suckle the infant, unless pressing reasons render this course unadvisable. It is best for the puerperal woman not to get up before the lochia have lost every trace of a sanguineous mixture. Sitting-up too soon—before the 8th or 9th day,—but especially premature leaving of the bed and physical labour, must be prohibited. It is unfortunately very often hard necessity which forces the women of the working-classes and partly also those of the middle classes, to resume their activity before the involution of their genitals is complete, which means about the end of the 6th week.¹

No less care than after a confinement, is required in the management of the puerperium after a miscarriage. It is here unfortunately where the recommendation to be careful is frequently disregarded, because the injurious influence of miscarriages is still greatly underrated.

Sexual intercourse in the presence of inflammatory genital affections.—That in all acute and sub-acute catarrhs and inflammations of the various parts of the genital tract sexual intercourse must be prohibited, goes without saying. But also in the presence of chronic inflammatory changes the permission to continue conjugal cohabitation has frequently to be withheld. The patients themselves generally come with the complaint that the pain increases violently in connection with cohabitation, as f. i., in inflammations of the ovaries and of the tubes, in parametric indurations and pelveo-peritonitic adhesions, or that hæmorrhages occur afterwards, as is the case sometimes in erosions at the portio vaginalis and in endometritis of the body of the uterus. Frequently in some of these cases pain is experienced altogether only during cohabitation, or in connection with other definite occasions, such as menstruation, defæcation and severe physical over-exertion. The cause of the occurrence or respectively of the aggravation of the pain lies partly in the direct pressure of the

¹See also the prophylaxis of the displacements caused in the puerperium. in the respective chapter.

penis against the inflamed organs, as f. i., in descended and severely inflamed ovaries and tubes, parametral cords, etc., but no doubt the intense congestion in the diseased tissues plays also a considerable part. Especially after often repeated coitus one frequently sees severe aggravations of the complaints.

The rule should therefore be laid down that, generally speaking, coitus must be abstained from as long as the patient is under medical treatment and there are markedly pronounced inflammatory changes in the genital apparatus. This rule must be the more strictly adhered to, the more severe and extensive the disease, and the greater the effect upon the general condition, particularly so if there are complicating serious neurasthenic and anæmic symptoms.

Exceptions must, however, be occasionally admitted; in some women complete abstention from sexual intercourse, if continued for some months, is capable of causing such a state of depression, such nervousness and irritability, particularly if the subjective feeling of illness is only a moderate one, that it is necessary to be very careful with the absolute prohibition of cohabitation, if the inflammatory affections are of a slight character, as happens especially in catarrhs of the cervix, parametritic indurations, etc.

If the woman is no longer under medical treatment and the organism is again in a satisfactorily strong condition, cautious and gradual resumption of the conjugal relations may be permitted after a few weeks. A guide as to the tolerance of the genitals towards cohabitation is the absence or re-appearance of pain, discharge or hæmorrhage. If these symptoms recur in consequence of a moderately exercised conjugal intercourse, the latter must again be absolutely prohibited and the affected parts must for some time be kept free from all irritation by sexual cohabitation.

Sterility in inflammatory diseases of the genitals.—The number of cases in which chronically inflamed conditions of the female genital tract prevent conception or the settlement of the impregnated ovum is a very large one; in by far the great majority of the cases the cause of the unfruitfulness lies in inflammatory diseases. It is clear that

the various inflammatory changes are here quite different in their importance.

Of very great importance is the chronic endometritis of the body of the uterus and, in a lesser degree, that of the cervix. The spermatozoa must traverse unhindered the uterine canal, and the impregnated ovulum must be permitted to develop in the mucous membrane of the uterus. But if the passage along the cervical canal is filled up by tough and hardened mucus the upwards travelling of the spermatozoa is considerably interfered with. No less injury may be caused by a profuse secretion from these parts, the spermatozoa are then simply washed away by the liquid stream or killed by the corroding properties of the secretion.

But even if the spermatozoa have successfully overcome these hindrances in severe catarrhal conditions of the uterus, there is in the alterations of the mucous membrane of the uterine cavity an element which makes it impossible for the ovum to become adherent. Or, if the mucous membrane permits the settlement of the ovum, its further development is soon interrupted; the import of chronic endometritis as a cause of miscarriage is too well known.

Inflammation of the tubes always produces sterility, as soon as their abdominal ends, or ostia, become agglutinated and closed-up. If we have therefore to deal with the consequences of a closure of the tubes—pyosalpinx, hydrosalpinx—the sterility does not require any further explanation, since in a case of this sort the union between spermatozoa and the ovum discharged from the ovary becomes impossible.

But tubal inflammations in which no closure of the ostium abdominale has as yet taken place, can also have some effect; the secretion which is produced by the diseased tubal mucous membrane can injuriously influence the vitality of both ovum and spermatozoa. The loss of the fimbriæ, too, prevents the further passage of the ovum into the uterine cavity. If one of the two tubes has remained passable and sound, pregnancy can of course occur.

If the ovarian structure is inflamed, and the connective tissue which surrounds the Graafian follicles greatly infiltrated,

considerable obstacles are thereby created. The follicle cannot burst, the ovum cannot be conveyed into the abdominal cavity, but remains in the ovary like in a closed box, and its junction with the impregnating spermatozoa thus becomes an impossibility.

More important still is, perhaps, the chronic inflammation of the pelvic peritoneum. Extensive adhesions, voluminous membranes may encapsule the ovary so completely that the egress of the ova is prevented or rendered very difficult. They surround the tube, twist it or close its ostium so that the ovum cannot enter or pass through. Compared to this the pelvic cellular tissue becomes of far less importance. The inflammation of these parts leads mainly through secondary displacements of the pelvic organs to sterility.

Relations of inflammatory genital diseases to pregnancy, labour and child-bed.—If a woman with inflammation of the uterine mucous membrane becomes pregnant, there develops from this inflamed mucous membrane a diseased decidua in which inflammatory processes may also be demonstrated microscopically and frequently also macroscopically. Far more rarely the endometritis arises only in the course of the pregnancy.

Milder degrees of inflammatory diseases of the mucous membrane often do not impair the further development of the ovum. In other cases, however, disturbances of some sort do arise: the fœtus develops badly (*Hofmeier*), it may even die, especially as a result of secondary displacements of the placenta, and of extensive infarctions or calcifications. Frequently more or less acute painful contractions of the uterus occur; there happen further during the pregnancy irregular hæmorrhages, occasionally also profuse secretions (*hydrops gravidarum*), or the after-birth period may be disturbed. A specially important event, however, is the frequent occurrence of habitual miscarriage in consequence of the inflammation.

Therapeutically the endometritis cannot be influenced during the pregnancy itself, but after the expulsion of the fœtus the treatment of the diseased mucous membrane must, of course, be taken in hand earnestly and energetically.

Of enormous importance are the inflammatory changes in the tubes and in the tissue round them, inasmuch as the main cause of the occurrence of tubal pregnancy with its dreaded results is frequently attributed to them; opinion on the point is, however, by no means undivided despite numerous anatomical observations.

The rarity of the occurrence of parametritic exudations during pregnancy is sufficient excuse for mentioning only briefly that the reciprocal relations between exudative parametritis and pregnancy, labour and puerperium, where they are present in combination, may be numerous and momentous. Those who take an interest in the details are referred to my contribution on the subject in the "*Archiv für Gynaekologie*." Vol. 68.

Permission to marry in inflammatory genital affections.—As already stated, severe inflammatory processes in the genital apparatus do not occur frequently in virgins. What they suffer from is an inflammation of the mucous membrane of the body of the uterus and of the cervix, more rarely in association with inflammation of the ovaries, and still more rarely with inflammation of the Fallopian tubes.

Clinical experience has shown that the chronic proliferative conditions in the cervix and in the body of the uterus which we are accustomed to describe as inflammatory, occur in virgins especially as accompanying symptoms of chlorosis and anæmia and of general physical debility, and also that they are most likely produced by insufficient hygiene of the genital organs, particularly at the menstruating period, by uncleanness or a cold in the abdominal organs, contracted about the same time. Some authors make the same injurious influences responsible also for the development in virgins of inflammation of the ovaries and of the tubes. It is, of course, possible for pathogenic organisms—apart from the tubercle bacilli with which we shall deal presently—to invade occasionally through the blood-vascular or lymphatic system or from the intestine the ovary in a virgin and to set up there an inflammatory activity.

In almost all the more pronounced inflammatory diseases of the genital apparatus, physical cautiousness, the avoidance of fatigue, sexual abstention, etc., are curative factors of the great-

est importance,—demands which, it is evident, newly-married people very seldom comply with. As a rule the sexual excess of the honeymoon, in conjunction with the fatigues of the wedding-trip and the domestic worries which the young wife has to contend with in her new home, is succeeded by an exacerbation of the inflammatory affection.

The physician must therefore urge that, if at all practicable, the conjugal cohabitation shall be preceded by a suitable medical treatment. It is only in rare cases, of course, that local therapy will here be indicated, as f. i., in endometritis with very profuse and weakening menstruations, if internal remedies and recommendations of a general character fail to achieve the desired result; a judicious regulation of the mode of life, a general treatment having as its principal aim the removal of the anæmia or of the chlorosis is more likely to prove beneficial. In addition to this it may be advisable to recommend full or sitz-baths. But where the anæmic and chlorotic complaints are in the foreground, and the discharge or occasional pains in the abdominal organs constitute more secondary troubles, we must remember the experience that marriage exercises sometimes in fact a beneficial effect upon the physical constitution, that the chlorosis often improves in a striking manner and that a pale and fragile creature may develop into a healthy and strong woman; the abdominal complaints disappear then as a rule by themselves. Unfortunately, however, we cannot always reckon upon such a result with certainty.

VI. Tuberculosis of the female genitals in relation to marriage.

If sexual intercourse with a man suffering from gonorrhœa constitutes by far the most frequent cause of the origin of the disease in women, and all the other possibilities of infection (such as sleeping with a person suffering from gonorrhœa, the use of towels, rags, or sponges soiled with gonorrhœal discharge, infection when making a gynæcological examination) are quite unimportant in comparison, we have to register almost the exact opposite with regard to the commencement of genital

tuberculosis in women, as it is only very rarely, indeed, that a tuberculous infection of the sexual organs takes place demonstrably through the medium of the sexual act. It may be recalled in this connection that the estimation of the tubercle bacillus as the cause of disease in the female genital apparatus took a similar course to that of gonorrhœa. As was the case with the latter disease, the importance and frequency of tuberculosis were for a long time thought of little value; in the text-books published 20 years ago the tuberculous affection of the female genitals received little recognition or none whatever, until *Hegar* by his pioneer work on the subject showed the significance of the disease in its true light. Subsequent investigations confirmed almost completely the relative frequency of tuberculosis of the female genitals. To quote here only a few of the more recent statistics in proof of this assertion, let me mention those of *Posner*, who in going through the post-mortem reports of 1300 cases, found uro-genital tuberculosis mentioned in 5% of all the bodies and in no less than 30% of the tuberculous ones. That there had been here no local causes co-operating is shown by the material of investigators in other countries: thus *Turner* in England found among 27 consumptive women tuberculosis of the genitals present 5 times; *Stratz* in Holland demonstrated genital tuberculosis in 22 out of 300 women-patients; *Stolper* in Vienna saw in 34 women who died from tuberculosis of some organ or other, genital tuberculosis present in 7 of them. These figures are, however, in all probability too low, at all events certainly not too high, as shown by a case of *Franqué* who subdivided two diseased tubes in 250 and 290 serial-sections respectively and found definite signs of the tuberculous nature of the disease in only a few of these sections. How easily such cases can remain unrecognised notwithstanding an autopsy and even after a microscopical investigation, becomes thus clearly evident!

It must be admitted, however, that in the majority of cases the tuberculous infection of the genitals is secondary and associated with an already existing tuberculosis in other organs, f. i. lung, intestine, peritoneum, whereas what we have to consider from the point of view of our subject, namely the question

of the transmissibility of the disease through sexual intercourse, depends in the first instance on the presence of a primary tuberculosis of the genital organs and on the complete absence of tuberculous deposits or of a demonstrable later-secondary-affection in other organs.

That tubercle bacilli can effect their first settlement in the female genitals, in other words, that there is a primary genital tuberculosis, may be regarded as proved by a number of careful researches, only half of which, however, can be considered as absolutely conclusive. In these, not only clinical observation, but also careful macroscopical and microscopical post-mortem examination, has demonstrated the absence of disease in other parts of the body, and it is only this latter method which can prove to satisfaction that although there were no other organic changes clinically demonstrable, there were none of an anatomical character which despite their not being recognisable by clinical methods, were nevertheless capable of infecting the genital organs secondarily with tuberculosis.

Production of female genital tuberculosis through conjugal intercourse.—But, if there is no doubt as to the existence of a primary genital tuberculosis, the possibility of infection through the medium of the sexual act naturally assumes an importance of the first rank. Two questions require here answering:

1. Does the spermatic fluid of men affected with tuberculosis of the testis, epididymis, etc., contain virulent tubercle bacilli?
2. Is the semen of a husband suffering from tuberculosis elsewhere, *f. i.* in the lungs or in the intestine, but whose sexual organs are intact, equally infectious for the wife?

Judging from our present knowledge, the first of these two questions can be decidedly answered in the affirmative; with regard to the second we are not in a position to give any definite reply. The numerous experimental investigations which exist on the subject have partly not been carried out with the necessary precautions, partly the results contradict one another; it is, however, probable that the semen of consumptives whose geni-

tals are normal, can also be infective. I wish to call special attention to the fine research-work of *Gärtner*, who arrives at the conclusion that the possibility of transmission of tuberculosis on the part of a man with tuberculous disease of the genitals is "at least $3\frac{1}{2}$ times greater than in general tuberculosis, but that it still remains insignificantly small."

Cases of tuberculosis of the female sexual organs after intercourse with a man suffering from genital tuberculosis have been reported by *Glockner*, *Wohl*, v. *Franqué*; *Derville* saw 5 cases of married women affected with genital tuberculosis whose husbands suffered from tuberculous epididymitis. *Fernet* communicates 4 cases of primary genital tuberculosis in women who were married to consumptive husbands. *Schuchardt* also draws from his observations the conviction that inoculation of tuberculosis through the medium of the sexual intercourse is by no means so rare as it is generally believed.

A special category is formed by the cases where the infection, though it does take place by means of the cohabitation, is, however, in the first instance due to the salivary secretion which the tuberculous husband may have employed for the purpose of rendering the penis more lubricous. In this way virulent bacteria may be introduced into the vagina from whence they display their devastating activity (case of *Hammer*). Besides, bacteria situated in the vulva and coming, perhaps, from the intestine may sometimes be passed by the sexual act further up towards the internal genitals.

But although the possibility of the occurrence of genital tuberculosis in women through sexual intercourse is beyond doubt, such an occurrence is nevertheless something of a rarity. If this method of infection were at all extensive, genital tuberculosis would be observed far more frequently, and particularly in prostitutes who are so often subject to the risk of being infected by tuberculous patrons. *Veit* assumes that the reason why tubercle bacilli are so seldom transmitted through the medium of the sexual act is, because men suffering from severe tuberculosis of the testis are as a rule impotent—a supposition which is probably incorrect to a great extent and which needs some restriction.

In any event we must remember that the close and intimate cohabitation prevailing between a healthy wife and her consumptive husband offers so many opportunities for the ordinary infection through the medium of the air to take place, which infection can give rise eventually to a secondary genital tuberculosis, that we are justified in considering as conclusive evidence only those cases which are unmistakably proved to be due to primary tuberculous disease of the female genital organs.

Moreover, the settlement and further development of tubercle bacilli, no matter in which organ, presuppose a certain predisposition, in the individual in question and to this rule the female genital apparatus forms no exception. *Hegar* has already pointed out the factors which play an auxiliary part: general physical debility, poor nutrition, severe chlorosis. Further, gonorrhœal disease also prepares the soil and makes it receptive for the tubercle virus. (*Hovas, Schuchardt.*) Favourable opportunities for the further development of the bacteria introduced into the genitals are supplied by the puerperal state, also by an imperfect formation of the genitals (a fact not confirmed by *Martin* at the hand of his material), by malformations in the sexual organs, and finally probably also by traumatic influences, especially epithelial injuries, such as are caused by and during coitus.

Transmission of genital tuberculosis from wife to husband.—The danger of transmission of genital tuberculosis from the organs of the wife to those of her healthy husband through the medium of the sexual act is in all likelihood even smaller than it is the other way about. As far as I could see through the literature there are no conclusive cases proving the occurrence of this eventuality.

Intra-uterine transmission of tuberculosis to the foetus.—On the other hand there can be no doubt with regard to the possibility of the transmission of tuberculosis to the foetus in utero.

Lehmann, as well as *Schmorl* and *Kockel*, have several times ascertained the presence of tuberculous nodules in the placenta. *Bugge* was able to demonstrate in a 30-days-old child of a mother who died from tuberculosis, tubercle bacilli

in a blood-vessel of the liver and in the umbilical vessels. Guinea-pigs which were inoculated with portions from the child's organs, died from tuberculosis without exception. *Merkel*, *Derville*, *Sarvey*, have also found tubercle bacilli in the fœtus. *Lehmann*, too, reports an undoubted case of intra-uterine acquisition of tuberculosis. It would appear from this that the view of *Baumgarten* as to the congenital origin of tuberculosis which remains latent, only to break out under favourable circumstances, receives at any rate a certain amount of confirmation.

Of great interest is an experiment of *Guzzoni* (quoted by *Amann*) who injected tuberculous masses into the injured vagina of a pregnant animal. The young thrown on the following day died 19 days afterwards from extensive tuberculosis. "It presumably became infected through aspiration of tuberculous masses during the labour process—an observation which, as *Orth* also thinks, is not without importance to human pathology as well!"

Sterility and tuberculosis of the genitals.—

In tuberculosis of the genital organs conception does not at any rate seem to occur often as far as one may judge from existing publications. Important in this respect are particularly the careful observations of *Martin*. *Martin* found as a striking phenomenon that among 24 patients with symptoms of genital tuberculosis there was only one in whom pregnancy occurred unmistakably after the commencement of the tuberculosis. Twelve of them did not become pregnant at all, although they were married to otherwise healthy husbands. In others the sterility-producing effect of the illness was according to *Martin* still more in evidence, if it is borne in mind that they had gone through several labours in rapid succession shortly or some time before their illness. *Martin* goes even so far as to see in the sterility accompanying genital diseases an important indication of the eventuality of a genital tuberculosis.

Further investigations will show whether and how far slighter degrees of tuberculous disease of the sexual apparatus also lead to sterility. That extensive destruction, especially of the tubes, renders a woman sterile, is of course quite evident.

Genital tuberculosis, and pregnancy, labour and puerperium.—But there are at all events cases known in which pregnancy did occur in spite of already existing genital tuberculosis (*Froriep-Rokitansky, Breus, Geil*). The normal course of the pregnancy is, however, interrupted by the disease; miscarriage or premature labour easily takes place. There is even a case known where a woman with uterine tuberculosis became pregnant, and where a spontaneous rupture of the uterus happened in the third month of the pregnancy. (*Mosler*.)

On the other hand it is possible for a genital tuberculosis to develop during a pregnancy, as is seen from the case of *Hühnermann*: Miscarriage in the 5th month, death from sepsis and miliary tuberculosis in the puerperium. The primary seat of the tuberculosis is discovered in the tubes. Judging from the anatomical conditions the same was still comparatively fresh. It was therefore presumed that the tuberculous process commenced after the occurrence of the conception.

Genital tuberculosis can to a certain extent remain latent during the pregnancy and assume a pronounced character in the puerperium, when it may under certain circumstances take a rapidly unfavourable course. It is well known that acute miliary tuberculosis occurs in the puerperium. From the published reports (f. i. those of *Merletti*) it would appear that in connection with labour such miliary tuberculosis may develop especially from a genital tuberculosis. In 5 out of *Merletti's* 16 cases of acute miliary tuberculosis in the puerperium cheesy deposits were found in the tubes. It is, further, also possible, as *Fassmer* supposes, that the tuberculously diseased placental site becomes after the labour or the miscarriage, the starting-point of an acute miliary tuberculosis.

We may at any rate say this: Just as a supervening pregnancy influences injuriously tuberculous disease altogether, so it does genital tuberculosis. Particularly during the puerperium one must be prepared to witness a violent aggravation, and an enormous spread of the disease over the entire organism.

From this we may draw the obvious inference that in tuberculosis of the genital organs pregnancy must be avoided. Cohab-

itation with a wife suffering from tuberculosis of the genitals can therefore be permitted in the condomatic form only.

As regards conjugal intercourse altogether, a decision can only be arrived at in each case individually; in the great majority of cases, however, where there are somewhat extensive changes, a considerable restriction must be imposed.

Permission to marry.—Seeing how serious the prognosis of genital tuberculosis is, permission to marry can only be granted in any given case if a sufficiently prolonged observation, extending over many months, warrants the assumption that there exists a well-marked healing tendency. It is further to be taken into consideration which portion of the genital organs is affected. If the tubes are diseased, the prognosis is notoriously much worse. In addition, the propagative faculty is generally arrested. The imparting of this information will in a good many cases assist in inducing the persons concerned to give up the idea of marriage.

VII. Cancer of the female genital organs in relation to marriage.

The observations made and the fears entertained on all sides with regard to the alarming increase in the prevalence of cancer, which resulted in the formation of a committee, presided over by *v. Leyden*, for the investigation of the disease, have received ample confirmation in the statistical calculations arrived at by that committee: Cancer must in point of fact be regarded as one of the worst national diseases. On the basis of tables giving the causes of death in the German Empire and on that of statistics issued by the Royal Prussian Statistical Bureau, *Wutzdorff* arrives at the following conclusions which may be regarded as fairly incontestable on account of the critical and careful sifting of the material:

1. Cancer is increasing in the whole of the German Empire.
2. All ages participate in this increase.
3. Cancer occurs on an average at a younger age than formerly.

4. The female sex is at the present day still represented in cancerous diseases to a greater extent.

Among the cases of cancer which affect the female sex we must place in the front rank cancer of the uterus. According to the unanimous results of the different statistics, cancer of the uterus constitutes no less than a third of all the cases of cancer put together that occur in the female population.

The transmission of cancer from one spouse to the other: (1) through conjugal life, (2) through cohabitation.—Of the greatest importance to married life is the question of infectiousness, of the transmissibility of cancer from person to person. In estimating these conditions we can, of course, take into account only such cases which occur in non-consanguineous relatives. Cases of cancer in parents and children or among brothers and sisters speak more for hereditary influences and do not come here into consideration at all. It so happens that there are most interesting observations in literature upon the point. *Guelliot* has collected 103 cases of *cancer à deux*—double cancer—that is, cancer which has attacked successively two individuals not consanguineously related, but living in close intimacy. In 89% of these cases—more than $\frac{4}{5}$ —the patients were husband and wife who became ill one after the other; in 63 of the cases the interval was less than one year, in 26 between one and two years.

Behla reports 19 observations of cancer in married couples; in a number of these cases the disease developed at short intervals. *Elsler* communicates privately to *Behla* the following interesting case: "B., a landed proprietor, falls ill with cancer of the rectum; his son-in-law M. who nursed him constantly for about 6 months, was attacked shortly after B.'s death with carcinoma of the lip; his wife—that is, B.'s daughter—developed during her husband's illness cancer of the breast. Neither in B.'s nor in M.'s family had cancer been observed previously."

A further series of similar single observations are found scattered among the literature and several eminent authorities confirm these observations from their own personal experiences. Thus *Czerny* writes: I have extraordinarily often seen husband and wife die from cancer soon after one another.

In favour of the theory that cancer is transmissible under certain circumstances speak also the following cases which were communicated at the 20th Congress for Internal Medicine: *v. Leyden* reported the case of a young individual from Berlin who developed cancer two years after swallowing a carcinomatous liquid.—*Naunyn* called attention to a similar case in which a doctor fell ill with cancer of the stomach some time after having drunk by mistake some cancer-juice.

Several times cancer has also been observed in persons who have nursed patients with cancer, used their instruments, washed their linen, etc. *Behla* made investigation as to the organs which were attacked by cancer in the other married partner, and it is remarkable that they were in the majority of cases the lips, eyelids, nose, mouth, ear and face, precisely those parts which are most frequently touched with the soiled fingers. *Park* observes in favour of the contagiousness of cancer that parts of the face are frequently attacked by the disease whilst the back escapes as a rule. Cancer on the back is notoriously very rare. *Czerny* found among many cases only one cancer of the back, "which could not be reached by the hands."

Of special importance for our subject are those cases in which cancer was supposed to have been inoculated through the conjugal intercourse. In 1887 *Tross* reported a case of cancer of the portio vaginalis in the wife and cancer of the penis in the husband; the cancer of the penis had developed afterwards and the histological character of both carcinomata was the same. A few years afterwards *Guelliot* collected 23 more observations of uterine cancer in the wife and penile cancer in the husband. *Behla* quotes after *Hall* further analogous cases, after *Langenbeck* 3 cases, after *Derndrequear*, *Thomas*, *Duplony* one each. The opposite condition has also been observed. *Watson* and *Hays* and *McEwen* have reported 8 cases of husbands with cancer of the penis whose wives died from cancer of the uterus. For these cases some, as f. i. *Behla*, assume a direct transmission through the sexual cohabitation. It must, however, be pointed out that the rarity of such cases, considering the enormous frequency of cancer altogether, is

not very conclusive evidence in favour of this opinion. To explain this rarity, as *Czerny* does, by the supposition that sexual intercourse is not practised much under these conditions, is not sufficient; it is well known that the cohabitation-hæmorrhages constitute the most frequent cause which brings the women to the doctor.

But if we bear in mind that *Kirchner*, on the basis of *Hirschberg's* report on the enumeration of cancer-patients under medical treatment in the German Empire on the 15th of October, 1900, arrives at the result that in just a seventh part of the entire number of the patients the suspicion of infection is justified we must nevertheless admit, although nothing definite and positive has as yet been established, that the possibility of infectiousness is a factor to be reckoned with and that this factor is of practical importance especially where a cancer-patient is living in close intimacy with a healthy relative.

Behla supposes that the secretions and the blood of carcinomatous ulcers, vomited masses and discharges from the anus and from the vagina, in other words media which reach the outer world, are the carriers of the contagion. Linen, the hands, utensils, etc., coming in contact with them constitute the intermediary agents. "For this there exist opportunities of all kinds, seeing that in view of the general negative opinion as to the infectiousness of cancer the necessary care and precautions are as a rule neglected." *Behla's* demand is therefore that the relatives of cancer-patients should be warned to be careful; he insists upon disinfection of the secretion and discharges, and he also recommends that all sick-room utensils, linen and bed-clothes, specula, syringes, enemata, drinking-vessels, plates, etc., shall be subjected to a thorough disinfection; nursing-attendants should be directed to disinfect their hands after every bandaging. *Braitwaite* goes so far as to demand the cremation of all cancerous dead bodies. Although this last suggestion appears in the face of our present knowledge of the matter exaggerated and unjustified, the cases reported call nevertheless decidedly for increased watchfulness. They compel us to pay some attention to the possibility of the

infectiousness and to insist at least upon a careful disinfection of all the articles used in connection with the nursing of cancer-patients as well as of the persons of the attendants.

Cancer and cohabitation.—We must begin by repeating what has already been briefly mentioned in another place (*Coitus interruptus* and diseases of women), that some authors are of the opinion that coitus reservatus practised for a long time creates a decided predisposition towards cancer of the uterus. *Valenta* thinks that his experiences permit him to assert positively that this factor contributes an appreciable percentage among carcinomatous women, and *Kisch* raises the point whether the marked increase in the prevalence of new-growths in the female genital organs has not some causal connection with the constantly increasing employment of anti-conceptional remedies among the widest classes of the population.

This opinion of *Kisch* is at once contradicted by the fact that it is not by any means cancer of the uterus alone which is on the increase, but that there is a more frequent prevalence of cancer in almost all organs. Besides, the greater frequency of established cases of cancer may to some extent be due to the improvement in our diagnostic aids which permits us to diagnose the disease sooner than it was formerly possible. This view may therefore for the present be regarded as an hypothesis which has not yet been proved, although it satisfies in a certain sense the "theory of irritation."

Mechanical obstacles to the performance of cohabitation are only very rarely present in cases of cancer of the uterus, namely, where the malignant new-growths situated in the vulva are so large as to render the introduction of the penis difficult, or where in the further course of vaginal carcinoma the whole vaginal canal is transformed into a rigid unyielding tube with an exceedingly narrow lumen. Here the immissio penis naturally becomes impossible. In a case observed at the gynæcological University polyclinic in Berlin about 18 months ago, the patient who was suffering from a no longer operable cancer of the vagina, was induced to present herself for treatment on account of the difficulty experienced at the exercise of the conjugal intercourse. Only further questions brought to light the fact that irregular

hæmorrhages had been present for some time along with a malodorous discharge; it must, of course, be admitted that the woman in question belonged to the peasant-class who are often very indolent in the presence of physical complaints.

It hardly needs mentioning that in the later stages of the disease the purulent secretion and the feebleness of the unhappy patient render all conjugal intercourse impossible or at least undesirable in the eyes of both parties, though, as experience teaches, this is not always the case. But that the marital relations need not experience any interruption at the beginning of the illness is clear from the character of the entire process; the first symptoms are by no means alarming; the slight discharge, the inconsiderable hæmorrhages frighten the people concerned so very little, that often enough they are quite free from the slightest feeling of illness. It must therefore be regarded as a fortunate occurrence if the sexual intercourse is instrumental in calling attention to the coming trouble: the hyperæmia of the genitals during coitus causes small blood-vessels to burst in the region of the new growth, or else the pressing penis acts directly as a traumatic agent by rupturing the friable blood-vessels, so that a more or less serious hæmorrhage arises in immediate association with the cohabitation, which acts in the case of persons who are not altogether indifferent as a sort of alarm-signal, dictating the calling in of a medical opinion. Although other isolated causes, such as colpitis senilis, erosions of the portio, etc., may also lead now and then to cohabitation-hæmorrhages, this statement of the patients possesses nevertheless the greatest importance. No doctor should in such cases consider it sufficient—as is unfortunately too often the case—to prescribe something or other and to declare the hæmorrhage as unimportant, as due to hæmorrhoids, or to excessive sexual connection, etc. An immediate and careful internal examination of the genitals is here absolutely necessary, and in the majority of cases the reason of the coital hæmorrhages will be found to lie in a malignant disease. Unhappily even where cohabitation-hæmorrhages are the only early sign of illness, the process is sometimes so far advanced that the chances of even a very extensive operative procedure are very doubtful indeed.

Carcinoma and sterility.—The question whether genital carcinoma prevents impregnation of the diseased woman, whether it has no influence upon it, or whether it favours it, whether it leads to sterility or not, has particularly some little time ago been the subject of a wide discussion. Some believed that cancer of the female generative organs prevents the impregnation of the ovum to a large extent, and renders it almost impossible, others, as for instance *Kohnstein*, laid down the axiom that cancer of the cervix is positively helpful to the occurrence of conception. Neither of these opinions is correct: it depends from the mechanical and chemical conditions present in each individual case whether the spermatozoa reach the ovum in a state of vitality and whether the impregnated ovulum finds in the uterus sufficiently favourable conditions to permit its settlement. Where the disease has already led to the production of a purulent secretion the discharge will most likely kill the spermatozoa directly through its corrosive nature and thus produce sterility. Where voluminous proliferations of the cervix or portio occlude completely the os or cervical canal the spermatozoa will find their passage to the uterus and to the tubes entirely obstructed.

Where, as is usually the case, the occlusion is not complete, and only the external os severely narrowed, there is, of course, a more or less considerable hindrance, but no absolute mechanical obstruction to the occurrence of impregnation, since the spermatozoa require but very little space. But if the carcinoma of the deeper parts is still in the initial stages, if there is no profuse or possibly a purulent secretion and consequently no mechanical obstruction of the passages, there can be no question of any obstacle to conception.

The case is different in carcinoma of the *body* of the uterus. Here the conditions for the occurrence of impregnation and settlement are doubtless far more unfavourable. In the first place carcinoma of the body occurs especially in women who have passed the sexually mature age or at any rate in women whose fruitfulness is considerably diminished—*Küstner* mentions the 6th decade as the average age of predilection. Then, the settlement of the eventually fecundated ovum in the cavity of the can-

cerously diseased uterus is certainly very materially hindered if not, as some believe, entirely impossible. The literature on the point is very sparse. Cases of cancer in the body of the uterus in combination with pregnancy have been reported by *Peter Müller*, *Chiari*, *Veit* and a few others; generally the disease commenced during the pregnancy. In some of the cases, however, the pregnancy is supposed to have occurred while the body of the uterus was already diseased. But *Teilhaver* rightly protests that these cases were probably no real carcinomata and that they must have been malignant deciduomata, a form of tumour with which we have only become acquainted since the publication of those cases. To some extent their description was very imperfect, too. At any rate, we cannot regard the cases published hitherto as conclusive instances of cancer of the body of the uterus in combination with pregnancy, although it is not in my opinion exactly possible to dismiss as altogether unfounded the theoretical potentiality of impregnation or of the settlement of the ovum in commencing cancer of the uterine body.

Double-sided cancer of the ovaries naturally leads always to sterility if the ovarian parenchyma has been entirely transformed into tumour-tissue.

A certain indication as to the frequency of impregnation in existing carcinoma has been supplied by *Stratz*, who has seen in 1034 cancer-patients observed during a period of 10 years pregnancy occur 12 times, that is in 1.16% of all the cases.

Carcinoma and fruitfulness.—In considering the relations between genital carcinoma and marriage, a further element deserves mentioning: How far does a very active exercise of their function by the female genital organs predispose the latter to cancerous disease through excessive cohabitation or numerous pregnancies? As to the first point, various suitable researches have been made in prostitutes (*Glatter*, and others), which have partly yielded negative results and partly been carried out so imperfectly that no definite conclusions can be drawn from them.

On the other hand we may regard it as certain that genital carcinoma is much more frequent in women who have borne children—especially in multiparæ. This applies, however,

only to the cancerous disease of definite parts, namely portio, cervix, and vagina, whilst preceding labours do not seem to play any rôle in carcinoma of the vulva, and cancer of the body of the uterus is even observed pre-eminently in nulliparous women.

The statistical researches of *Gusserow* are very interesting. He found in a number of 580 cases 3025 labours at full term (miscarriages were not included). This would mean an average of 5.1 births for every single one of these women, that is, considerably more than the average number of births when taking all women. These figures have received ample confirmation (*Beckmann, Orthmann, Heinsius*). Some authors quote even higher figures (*Glockner*) and every gynæcologist with a large material at his disposal meets daily with the same experience, namely that cancer of the portio and of the cervix attacks with predilection women who have gone through several labours. *Von Winkel* mentions that he has seen particularly often women attacked by cancer who had a record of difficult labours.

We must therefore admit the furthering influence of the generative processes on the development of cancer in certain portions of the genital apparatus, though we are ignorant of the elements constituting here the decisive factor. *Ashton* and various others believe that labour-injuries at the portio and cicatricial formations succeeding them constitute the cause of origin; *Küstner* lays stress on the fact that cancer of the uterus attacks frequently women who have often borne children as indicating nothing else than that the frequency of the injuries caused by labour and the puerperium are more liable to give rise to chronic inflammatory processes. The first explanation wants, as *Frommel* correctly observes, anatomical proofs, but there seems to be in my opinion something in its favour. According to *Küstner's* hypothesis the body of the uterus in which chronic inflammatory processes connected with parturition are more likely to form oftenest, should consequently oftenest be subject to the development of cancer. But cancer of the body of the uterus is just the very form which is observed pre-eminently in women who have either never borne children at all or shown very little fertility.

The frequency of the combination of cancer of the female genitals with pregnancy.—If a woman with genital cancer is so unfortunate as to become pregnant, or if cancer develops in a pregnant woman, one of the most serious complications is thereby created both in respect to the course of the pregnancy and of the puerperium for mother and child as with regard to the further progress of the cancerous degeneration. The complication of pregnancy and cancer was formerly regarded as exceedingly rare, but the numerous published cases and still more the larger statistical communications on the point have shown beyond doubt that although this complication is not very frequent it is, on the other hand, by no means to be considered as a rarity. *Winkel* found among 20,000 births 10 cases, *Stratz* among 17,832 births 7 cases, *Sarwey* among 5001 births 7 cases, *Glockner* among 26,000 births and miscarriages 6 cases. During my assistantship so far at the maternity-policlinic of the Charité I have seen in 5 years 3 times a combination of pregnancy and cancer of the portio (including one with simultaneous cancer of the vagina), divided approximately among 4000 labours and miscarriages. Taken together, these figures show 76,861 labours with 50 cases of cancer, or 1 case of cancer to 1537 labours and miscarriages. According to *Schwarz's* well-known statistics, there occurred in Hessen-Kassel among 519,328 labours 332 cases of placenta prævia, that is, one to 1564 labours!

Pregnant women with cancer are on an average younger than non-pregnant cancerous women. According to *Sarwey's* calculation, the majority of pregnant cancer-patients are in the 4th decade, and the majority of women with cancer altogether, in the 5th decade. *Sarwey* explains this fact quite correctly in this way, that cancer occurs on the one hand mostly at an advanced age when the highest point of fertility has more or less long since been passed, and conception is to a certain extent a relatively rare event, and that on the other hand pregnant women who are in their best years as far as the propagative faculty is concerned are seldom attacked at that younger age by cancerous disease. "Thus the two conditions exclude each other

to a certain extent on account of their occurrence at different times in younger and older people, respectively, and both have in common only a comparatively small portion of the more advanced time of life in which a woman who still possesses her conceptive faculty, may develop cancer in combination with pregnancy."

What arises first, cancer or pregnancy?—

Whether the carcinomatous disease was already present before the commencement of the pregnancy or whether it developed only in the course of the latter is not always possible to answer with certainty. The anamnestic data from which we can to a certain extent infer the duration of the carcinomatous degeneration are the irregular hæmorrhages and the discharge. But just on these points the information is often of a very indefinite nature only. In one of my cases (Mrs. R.) "traces of blood" were said to have been discharged "through the entire period of pregnancy." The cancer of the portio occupied a space about as wide as a pencil and 4 cm. long on the right border of the os uteri which was about the size of the palm of the hand. Here there were situated hard and knobby masses partly bleeding. There was further on the posterior wall of the vagina an elevated ulcer about the size of a five-shilling-piece and about $\frac{3}{4}$ cm. high, which was very hard and somewhat friable and which bled easily. The connective-tissue was as far as it could be established perfectly free to the palpating finger.

In the second case (Mrs. S.) there was said to have existed "for some months a discharge like meat-water"; the patient also said that there was some hæmorrhage during conjugal intercourse, and at other times too, now and again. The border of the os uteri—about the size of a five-shilling piece—in this parturient woman was transformed to the extent of about $\frac{2}{3}$ of its size, into a more than finger-thick and finger-wide infiltrated, ragged part covered to a great extent with normal mucous membrane. There was but little hæmorrhage during the examination, and no foul pus at all. In this case we can assume almost with certainty that the cancer arose in the course of the pregnancy. Because the cancerous degeneration was only in its initial stage while the labour came on at the right time with the

conclusion of the pregnancy. From the observations recorded in literature it results that the carcinomatous disease existed in the majority of cases probably before the beginning of the pregnancy, as they refer mostly to far advanced stages of the carcinoma at a relatively early period of the pregnancy; generally the anamnestic statements are also accordingly.

Influence of pregnancy and puerperium on cancer.—The opinion was formerly held that the occurrence of pregnancy exercises a very favourable influence upon the cancerous degeneration. *V. Siebold* maintains even that he has observed a spontaneous cure of genital cancer owing to a supervening pregnancy. French obstetricians, it is true, do not go quite so far, but *Pinard*, for instance, considers the rapid growth of cancer during pregnancy as by no means proved, and *Varnier* agrees with him while reporting a somewhat remarkable case:

In October, 1897, the presence of an enormous carcinoma of the portio was ascertained in a pregnant woman. The following year there was again a pregnancy, and death did not take place until October, 1900.

This opinion is interesting in view of *Zweifel's* well-known experiment. He marked by means of a loop of thread the border-line between the healthy and the diseased parts in a case of cancer during pregnancy. A fortnight later the disease had progressed by about two finger-breadths, no doubt a proof of the enormous growing tendency in this case! A short time ago there came into the gynæcological policlinic a patient, aged 32, who had been confined for the 4th time 6½ weeks previously. Three weeks before the confinement slight hæmorrhages had occurred now and then, the labour had taken place spontaneously and without any complications, but during the puerperium the sanguineous discharge had not diminished and latterly it had become exceedingly malodorous. Examination revealed a very considerable, highly purulent carcinoma of the whole portio. The mobility of the uterus was only a moderate one, the parametrium of one side was, if not highly so, at any rate markedly infiltrated. It would not probably be going too far if we were to admit in this case a deleterious influence of the

puerperium; the growth of the malignant new formation was undoubtedly promoted by it very materially.

On the whole it may be regarded as certain, judging from the cases published, that with a few rare exceptions, pregnancy and puerperium exercise an exceedingly unfavourable influence on cancer. The permanent hyperæmia, the severe relaxation of the tissues, favour a rapid spread of the process to a very great extent, and so an intense aggravation occurs as a rule far more quickly than in the absence of pregnancy, and it becomes impossible for the diseased focus to be completely removed. Or else, as it has been observed in a number of cases, the local destruction makes such rapid progress during the puerperium that the women succumb to their illness in the first few weeks after the confinement even though the latter has been a comparatively favourable one.

Influence of cancer on pregnancy, labour and puerperium.—The influence which cancerous new-growth in the genital apparatus exercises on the course of the pregnancy and of the puerperium varies according to the extent of the disease and also according to the seat of the carcinomatous centre. In some cases there is hardly anything noticeable of a serious disturbance in the course of the pregnancy, of the labour and of the puerperium, as in the above-quoted case of Mrs. R., and in that wherein I ascertained 6½ weeks post partum an extensive carcinoma of the portio which must no doubt have existed already at the confinement. In both these patients there had occurred slight hæmorrhages during the pregnancy, but the pregnancy itself had taken an undisturbed course until its normal conclusion. The confinement had passed off without any complications, nor had there been any trouble in connection with the lying-in period.

This is, however, what happens in the minority of the cases. As a rule there occurs a decided and very unfavourable influencing of the generative processes. We can hardly be wrong if we assume in agreement with different statistics that cancerous proliferation occasions in about 30-40% of all the cases spontaneous abortion or premature labour. The reasons for this are of a different kind. Sometimes it is because of the simulta-

neously existing chronic inflammatory processes of the uterine mucous membrane, in other cases it is on account of the spread of the carcinomatous masses in the body of the uterus or into the pelvic cellular tissue, and in others, again, the weakening severe hæmorrhages and the general body-waste seem to play the principal part. Occasionally, however, the pregnancy persists notwithstanding most severe and far-reaching degeneration of the tissues.

In the further course of the pregnancy spontaneous rupture of the uterus may occur through the friability of the diseased tissue; comparatively often placenta prævia has also been observed, probably in consequence of the concurrent inflammation of the mucous membrane.

The disturbances at labour may manifest themselves in 3 directions: first, in the low progress of the labour-act, which may amount to total impossibility of the expulsion of the fœtus in a natural manner, this of course depending upon the extent to which the carcinomatous tumour obstructs the passages and also upon the dilatability of the diseased maternal soft parts. In the case of Mrs. S. which I observed it eventually became necessary to make several incisions in the non-carcinomatous portion of the crown-sized os uteri and to apply forceps, after waiting for 17 hours in vain for the dilatation of the os to make some progress despite comparatively good pains. Otherwise the labour took quite a favourable course both for mother and child. Secondly, very severe disturbances may arise through the laceration of the decomposed morbid tissues in consequence of the pressure from the descending child, and also ruptures of the uterus or of the cervix. Finally, the labour process as such, the expulsion of the fœtus, may occasion an introduction through inoculation of purulent cancer-masses into the lymphatic circulation and thus bring about a more or less serious, and sometimes even a fatal general infection.

That these processes which may act during labour can also exercise a most unfavourable influence upon the puerperium, is perfectly clear. Death from exhaustion or infection, venous thrombosis, entrance of air into the veins, are unfortunately by no means rare occurrences.

Treatment in complication of carcinoma with pregnancy, labour and puerperium.—The limits of this work permit only a brief sketch of the treatment to be adopted in a case where pregnancy, labour or puerperium is accompanied by cancerous disease.

If the anamnestic statements of the patient to the effect that she suffers from irregular hæmorrhages or from hæmorrhage during cohabitation, or from a profuse serous or meat-juice-like discharge, give rise to a suspicion that the case is one of cancer, and if the local examination of the genitals which must, of course, immediately be instituted at all events, confirms this suspicion, the question that arises next is: Is there still a possibility to remove the morbid focus by an operative interference?

If this is so, the radical operation must be performed without delay. Just in cases of complication with pregnancy one often meets with opposition from the pregnant woman as well as from her friends who are anxious to postpone the operation at least until the fœtus is certainly viable. Religious scruples also play here a part sometimes. It is well-known that the decrees of the Catholic Church condemn unhesitatingly the destruction of the fœtus with the object of saving the mother's life, even where the death of the child is certain to occur without any interference either. It is therefore the duty of the doctor to point out to the relatives in all seriousness that the sole possibility to save the mother lies in an immediate operation, that pregnancy supplies a particularly favourable soil for the rapid extension of the process, that in 30-40% of the cases spontaneous miscarriage occurs in any event, but that to wait for this to happen, probably means that there will be nothing left to save.

But if the cancer is still operable and the patient is taken in hand at once the prospects are not at all excessively bad: *Hense* calculates from his statistics that 24% of the operable cases get permanently cured.

It stands to reason that where the embryo is viable—that is in the last two months of the pregnancy—delivery of the same must be effected before the diseased organ is removed. But the artificial induction of premature labour cannot in this connection be regarded as a desirable mode of proceeding. Days

often pass before labour pains set in, and in the meantime the cancer may make rapid progress.

The size of the pregnant uterus hardly plays any important part in view of the great advances made by modern operative surgery. Whether the uterus is to be removed per vaginam or by abdominal section depends of course from the extent of the carcinomatous deposit and from the personal operative inclinations and experience of the individual surgeon. So far it cannot be said that there is unanimity on the point. As a very suitable procedure *Dührssen's* vaginal Cæsarean section—a technically not difficult operation—has recently been warmly recommended by several operators, and advocated among others by *Bumm*. Following delivery of the child per vias naturales according to this method vaginal total extirpation is performed immediately afterwards. In more advanced carcinomata some, like for instance *Orthmann*, rightly prefer the abdominal methods of operation since they offer better chances for the radical removal of the parametria and glands.

If the case can no longer be regarded as operable, there remains of course nothing else to be done but a symptomatic combating of the complaints, and here full regard must be paid to the life of the child.

If the cancerous degeneration is discovered at the labour only, and there exists as yet a possibility of operation, the carefully executed delivery must immediately be succeeded by total extirpation. The size of the recently puerperal uterus presents, as numerous experiences have shown, no considerable difficulties whatever in this respect and must not be allowed to weigh against the risk of unlimited increase in the cancerous proliferation as a reason for delaying the operation.

If the radical operation does not offer any possibility to save the life of the mother, the least that can be done is to attempt everything with a view to preserving the life of the child by the usual obstetric operations. Where a natural labour cannot possibly be looked for it is best to make up one's mind to perform Cæsarean section in good time, that is at a period when mother and child are not yet in immediate danger of losing their life. Should the cancer be discovered during the

lying-in period, the radical operation must, of course, be performed at once if it is possible yet to do so, and not postponed until complete evolution of the parturient canal has taken place.

The nursing of carcinomatous women. Their domestic arrangements.—It is evident that the unhappy sufferers from the terrible cancerous disease can only very imperfectly fulfil their domestic obligations. Unfortunately, however, it is women with large families who are particularly often the victims of the scourge. Nor is it easy for the relatives of the poor patient to exhibit devotion and readiness in nursing them. The penetrating, almost unendurable, odour of the cancerous discharge makes contact with the afflicted woman a dreadful ordeal. I regard as the most suitable remedy for the disinfection of the discharge pads of cotton wool dipped in a solution of permanganate of potash, which can be introduced into the vagina or placed in front of it. They must as a rule be changed every hour.

To correct the smell pervading the sick-room *Küstner* rightly recommends bromine. (Sticks of bromine-marl are placed in a small glass-stoppered bottle. The stopper is allowed to remain loose by means of a strip of paper, and the small quantity of escaping gas is sufficient to remove the bad smell of the room.)

In this way the poor patient becomes less troublesome to those around her, thus her relatives can continue to nurse her with all the loving care they are capable of bestowing upon her without having to suffer through the unbearable stench, until the inevitable end brings release to the sufferer.

VIII. *Myomata and marriage.*

Frequency of myoma of the uterus in married and in single women.—As regards the absolute frequency of uterine myoma, no conclusions can be drawn from the examination of living women or from clinical investigations, as in numerous cases patients with myoma never consult a doctor because they experience no complaints. Only post-mortem results constitute decisive evidence. Among the entire number of 2409 female bodies dealt with by the statistics of *Essen-*

Möller, *Winckel* and *Fewson*, there were altogether 268 affected with myoma=11%. The figures of individual authors also agree fairly well, and since the observation-material refers moreover to various countries, we may on the whole look upon this number as a serviceable average-distribution of the disease. A curious want of unanimity prevails with respect to the question whether myoma attacks more frequently married or single women. That the uterus when not capable of exercising its energy for further growth and for further development within the physiological limits of the generative process, is apt sometimes to give vent, so to speak, to this tendency by the production of myoma-germs, in other words, that spinsters show to a certain extent a greater predisposition towards the formation of myomata than married women—this is an opinion warmly advocated by several authors. And a few figures seem indeed to speak in its favour. Thus *Schumacher* (*Fehling*) among others found in 189 patients with myoma in the clinic at Basle, two married women to one unmarried, while in the other gynaecological diseases there were five married women to one unmarried. *Essen-Möller* ascertained in 532 myoma-patients that there was one virgin to two non-virgins; on the other hand, in 11,203 non-myomatous patients the proportion was 1 to 4. Against this, we have the statistics of *Gusserow*, *Winkel*, and *Schröder*, which are based on altogether 2306 fibroma-patients and which show that 70-77.5% of these were married, a figure giving exactly the opposite result. Those who agree with these authors point out that the reason why relatively many spinsters seek medical advice on account of myoma is, because unmarried women are less affected with inflammatory affections, seeing that the consequences of cohabitation, pregnancy and labour are in their case entirely absent.

The question is by no means to be regarded as settled. The valuable conclusion of pathological anatomists (*Orth*)—who have occasion to observe also such cases which presented during life no material disturbances—that girls who have remained unmarried supply a comparatively high percentage speaks undoubtedly very much in favour of the opinion mentioned first. As a matter of fact *Virchow* says: "I have examined few bodies

of old maids in which there were no myomata found, whereas in many women who had been parous, the uterus remained free even at a very advanced age." It seems to me beyond doubt that post-mortem results deserve here greater conclusiveness than clinical observations, which are after all very much more liable to mistakes.

Abnormal conjugal intercourse as a cause of myoma.—The opinions with regard to the influence of sexual factors on the origin of myomatous tumours are, like those on the etiology of myoma, altogether as yet of an hypothetical nature only.

If *Valenta* considers it from his experiences demonstrated that interrupted coitus plays a considerable part as a causative agent in the origin of myoma, we are bound to admit that his opinion is entitled to respect, but he has not supplied any proofs in support of it. *Kisch* is also decidedly inclined to favour this view. *Veit*, too, considers the imperfect form of intercourse as an etiological moment, no matter whether the husband is less potent than the sensuous disposition of the wife demands, or whether premeditated anti-conceptional remedies are applied. He attaches particular value to the continued irritation if the practice is carried on for many years.

Virchow has already called attention among the causes of the origin of myoma in the first place to "uncommonly high local irritations." That the more or less chronic hyperæmia of the internal genital organs present in these cases can here be of importance as a factor favouring the growth of myomata, is not improbable. Nor can we altogether dismiss the possibility that an "irritation" in the sense of *Virchow*, favouring the origin of the tumour might be contained in these sexual over-excitations. It must be admitted, though, that we have no proofs for this. All we can say therefore is: The possibility that imperfect cohabitation supplies an etiological factor for the formation of myoma does exist, but we can attach no more than an hypothetical value to this opinion.

Myomata and cohabitation.—Obstacles to cohabitation through the situation of uterine myomata are on the whole rare. I saw not long since a case in which the posterior

lip of the portio and the whole posterior wall of the cervix were transformed into a round myoma of a size larger than a child's head, which filled the vagina almost entirely and reached as low down as the introitus. The introduction of the male member was here possible to the extent of a few centimeters only and the regular performance of cohabitation was thereby considerably disturbed. Generally, however, the cervical myomata which come into consideration in the first place permit a sufficient intromission of the penis.

Sexual intercourse leads in some cases of myoma directly to cohabitation-hæmorrhages; the vascular congestion which occurs during coitus can occasion ruptures in the blood-vessels of the simultaneously inflamed uterine mucous membrane. In fact the tendency to hæmorrhages is sometimes decidedly increased by frequent cohabitations. In many cases of myoma where the patients complain of pain, especially of a peritoneal origin, the conjugal intercourse often also causes an aggravation of this pain.

In such cases it is, of course, necessary to prohibit coitus altogether or at least to restrict it materially, whereupon an improvement in the condition generally takes place.

Influence of myoma on conception.—That the presence of a myoma need not necessarily prevent in the least conception and fecundation of the ovum, is seen from the numerous cases in which myomata, especially small subserous ones, are met with in parturient or puerperal women. But the question which we have to ask ourselves is: How great is as a rule the influence which uterine myomata possess with regard to sterility?

It was firmly believed until a short time ago that myomata very frequently cause sterility, and we must at once admit that there are sufficient elements connected with myomatous disease which may render the occurrence of conception very difficult. In the first place the entrance of the spermatozoa is frequently very much hindered through the displacement of the external os, especially in myoma of the cervix. Then, the cavity of the uterus itself is sometimes extremely lengthened and full of recesses, the mucous membrane shows in many places severe

endometritic changes which in their turn prevent the occurrence of fecundation and the settlement of the eventually impregnated ovum. A profuse secretion and abundant hæmorrhages may wash away the spermatozoa, and in a not inconsiderable number of the cases the adnexa are extremely displaced. There are thus sufficient factors in many cases of myoma which may lead to sterility.

This agrees in fact with the calculation which *Olshausen* has made with the help of statistics by *West*, *Röhrig*, *Beigel*, *Schumacher*, *Scanzoni*, *Michels*, *v. Winckel*, *Schröder* and *Hofmeier*. Among the entire number of 1731 married women there were 520 sterile, that is 30%. Since the average sterility of married women is 8.15% (*Peter Müller*) we have here therefore a very considerable difference, even if we take into account the fallacy, as *Olshausen* truly observes, that among these patients with myoma a certain number seek medical advice only because of their sterility.

This view which was entertained by the great majority of gynæcologists with regard to the influence of uterine myoma on the occurrence of conception received in 1894 a severe blow at the hands of *Hofmeier* who in revising his own large material of 213, and later on, of as many as 550 cases, arrived at a negation of the direct and indirect causal connection between myoma and sterility. *Hofmeier* found that in by far the largest number of myomatous patients the myomata as such are not in the least responsible for the sterility of the respective marriages which arises from totally different causes, or has at any rate very little to do with the presence of the tumour. Most marriages are entered into by women in the twenties, whereas myoma does not as a rule commence before the 4th decade has been reached; it is observed much more rarely in the thirties and only quite exceptionally in the twenties. It is therefore not feasible to attribute to myoma the presence of a sterility which has existed for 10 or 20 years.

Hofmeier now goes so far that he not only denies to myoma every importance as a sterility-causing factor, but he actually regards its presence sometimes as a conception-favouring element, in this way, that where myomata are present ovulation

and menstruation last rather longer and conception may therefore possibly occur yet in somewhat older women who would in the absence of the tumour, no longer be capable of conceiving. He quotes in support of this view a number of conceptions in older women with myoma, some of which occurred after a pause lasting for many years.

With regard to this argument I am inclined to agree entirely with *Olshausen* when he says that in isolated cases conception can probably be accounted for by means of this prolonged continuation of the propagative faculty, but that with respect to the majority of cases the simpler explanation of *Nauss* suffices that although myoma renders conception difficult it is on the other hand no absolute obstacle and that conception may therefore very well occur yet even after a longer interval.

Hofmeier tries to explain the fact that a relatively large percentage of sterile marriages occur among myomatous patients and also that single women are comparatively more frequently attacked by myoma, in the same way as pathological anatomists do. He sees in the absence of pregnancy and of the puerperium with their manifold influences upon the uterus an element which promotes the development of existing tendencies, whilst in married and fruitful women pregnancies and the puerperium particularly act more as "retarding" factors. During the puerperium the tumours often disappear completely, inclinations to tumours are counteracted and demolished or arrested in their development. "In this way it is possible to explain without any difficulty how it is that so many women suffer from myoma during their more advanced years, women who have at an earlier age conceived only once or not at all."

The whole of *Hofmeier's* highly meritorious work supplies a uniform picture which acts most convincingly and persuasively. As a matter of fact we can in very many cases of sterile patients with myoma absolutely reject the tumour as the cause of the sterility, whilst it must be admitted that in others such an influence is very well imaginable. Further large statistics tabulated from uniform points of view and with a careful consideration and examination of the individual cases will show to what extent *Hofmeier's* view as to the insignificant importance

of myoma as a cause of sterility applies, and whether the majority of myomatous women have become sterile on account of their myomata or whether they developed myomata because they were sterile.

In order to be able in any given practical case of myomatous disease to express an approximately accurate prognosis whether sterility is to be apprehended or not, various things will have to be taken into consideration. First, we must remember that myomata especially occur chiefly the other side of the 35th year, that is, at a period of life when fruitfulness begins under any circumstances to diminish somewhat rapidly. Secondly, it is necessary to inquire carefully into other diseases which might be responsible for the sterility, such as for instance gonorrhœal inflammation after marriage, perimetritis, etc. Finally, the seat of the myoma is of considerable importance; the effect of the various forms is not always the same, nor is it interpreted exactly alike by the various authorities (*Gusserow, Hofmeier*). Except in one point to which I shall presently return I am in entire agreement with *Olshausen* who gives in his excellent contribution to *Veit's* manual the following summary: Genuine sub-serous myomata interfere with conception probably in exceptional cases only, large sub-serous myomata form frequently an obstacle (through the displacement of the appendages and the closing of the tubes) but occasionally they only render conception difficult and the latter occurs nevertheless later on. Interstitial myomata (*Olshausen* includes among these the tumours which have already caused a certain amount of elongation of the uterine cavity) constitute a material hindrance to conception (through the disease of the mucous membrane and the changes in the uterine cavity) and if they are of a certain size—corresponding to the third or fourth month of pregnancy—the obstacle is almost absolute.

It is on this point where I differ from *Olshausen*. I have frequently seen conception occur in the last-named kind of cases, and in fact not always with difficulty. In my opinion we can speak here of a material, but not of an absolute or nearly absolute obstacle.

Cervical myomata no doubt prevent conception as a rule

but not always. We may say the same with regard to polypi as is seen especially from those not very rare cases in which the removal of a polypus is soon followed by a conception after a pause of many years.

Influence of myoma on the fertility.—If we wish to study the effect of fibroid tumours of the uterus on the fruitfulness of women, we must in the first place ascertain how great the fruitfulness of non-myomatous women is; we have further to find out the normal percentage of women with one or more children. Having ascertained these figures, it is necessary to establish the average fertility of women suffering from myoma and also the proportion between myomatous uniparæ and myomatous multiparæ. Should there be a sufficiently sure and material difference between healthy women and women suffering from myoma, there remains further to consider whether and how far this difference is caused by the growth of the myoma-tumours.

The average conjugal fertility for Prussia has been calculated by the Royal statistical department for the decade 1881-1890 to amount to 4.4 births. (After *Fränkel*.) The general statistics of Saxony (*Winckel*) show an average fertility of 4.5 births. The reports of the Sanitary Administration of Bavaria give for the 16 years 1876-1891, 4.32-4.96 births as the average marriage-fertility.

On the other hand the average number of pregnancies in women with myoma is given by *Schorler* as 3.4, by *Röhrig* as 3.3, by *Hofmeier* as 3.6, by *Fränkel* as 3.57, figures which show a decided agreement among the different authors. The number is therefore by about one birth less than the average fertility of married women in Germany, which is equal to a diminution in the fruitfulness of myomatous women to the extent of 22%. This considerable retrogression in the fertility applies, as results from the corresponding figures of nearly all authors, in the first place to those women who have gone through one pregnancy only, and afterwards remained sterile. Among 5983 non-myomatous married hospital and private patients *Hofmeier* found 371 or 6.2% thus secondarily sterile, viz.: no renewed pregnancy had occurred after the first confinement for at least

5 years. Against that he found among his 315 patients suffering from myoma who had borne children at all, 63 = 22% who had experienced one pregnancy only and afterwards remained sterile. This agrees fairly well with *Fränkel's* figures: 24.7% single-births in myoma-patients, and only 5% single-births among 2000 women suffering from other gynaecological complaints. The majority of gynaecologists had previously assumed and concluded on the basis of a small observation-material of other authors and from their own experiences that the presence of myomata frequently prevents later conception and that it is therefore the cause of diminished fertility. Against this prevalent view on the influence of myoma on fertility *Hofmeier* also entered a protest by pointing out that the average age of secondarily sterile myomata-patients who consulted him was 42-43, and that on an average 16.5 years had elapsed since their only child-birth. Were we to accept here the general view, we should have to admit that the myomata had for 16 years already produced such alterations in these women as to render them incapable of further conception, while the subjective phenomena had only become manifest quite recently and the condition of the genital organs at the time the disease was diagnosed did not in any way differ from that present in women who have undergone several pregnancies. This would mean that not only the beginning of the disease but also a fairly advanced stage of it was already existent at about the 27th year, which again does not accord with the fact that myoma develops on an average after the age of 35. *Hofmeier* then goes very carefully through his own cases of one-child sterility in myoma and arrives at the result that hardly once was it possible to state with certainty that the sterility was in reality or probably due to the myomatous disease. It is rather elsewhere that the cause is to be looked for than in the later-occurring myoma.

As the cause of the relatively frequent conditions found in myoma in secondarily sterile women, he regards the same element as was already pointed out by older writers, and which he makes responsible for sterility altogether: the absence of the retarding factors which are capable of arresting the further

development of the tendency to tumours, namely the absence of puerperia.

Those who agree with *Hofmeier* in refusing to look upon myoma in general as a cause of absolute sterility will have no difficulty in sharing his views regarding one-child sterility as well.

It is however different in those cases where myomatous women have had several children and have afterwards become sterile.

Here I believe, like *Olshausen*, that "an influence on the part of the myoma is very well imaginable."

But if *Hofmeier* says that the state of things is in secondary sterility alike to that in primary sterility, this is probably true on an average with regard to one-child-sterility only, but does not apply to the gist of *Olshausen's* remarks which do not refer to one-child sterility at all, but rather to those cases where the women have after several labours become sterile through the myoma which has in the meantime made its appearance. Here *Hofmeier's* objection that the beginning of the sterility lies a long way off the beginning of the myoma, can hardly come into general consideration, since those women who have already experienced several pregnancies, are mostly of a maturer age at which myomata are capable of exercising a very considerable influence, indeed.

Although a solitary case certainly cannot be said to prove anything I should, nevertheless, like to mention it briefly, as it illustrates typically the conditions described:

Mrs. Sch., 38 years old, has had three children, the first when she was 25, the second when 28, and the last when 30 years old. All the three labours took place spontaneously, the puerperia were said to have passed off without any elevation of temperature, nor has there been any other illness. For the last $4\frac{1}{2}$ years she has complained of a gradually increasing sense of pressure in the abdomen. The examination reveals a myoma of the cervix, almost as large as a child's head, the external os uteri is situated quite laterally and high up. The husband is said never to have had any illness, preventive

measures have allegedly never been employed, and conjugal intercourse was still regularly being exercised. Who can avoid the impression that this woman was, perhaps, prevented through the myoma from again conceiving, in other words, that there might have been in this case a causal connection between myoma and sterility in a woman in the thirties?

To sum up what has been stated above I should say: *Hofmeier's* teaching that the fibroid tumours have nothing at all to do with sterility and fruitfulness, is very acceptable in so far as it relates to absolute and one-child sterility. But with regard to the absence of later pregnancies the influence of myoma cannot be altogether denied, at any rate it is only the future sifting of a large material and the careful analysis of every individual case that will eventually enable us to form a definite opinion on the subject.

Influence of pregnancy on myoma.—The influence which a supervening pregnancy exercises upon a myoma situated in the uterus manifests itself principally in 3 directions: 1, the position, 2, the size, and 3, the form of the myoma.

1. The effect upon the position of the tumour is so far of very great importance, as there occurs in many cases a sort of migration of the myoma from the true pelvis into the false, a contingency which is obviously of the highest moment with regard to the subsequent labour and the disturbances to be apprehended on account of the position of the myoma. With the elevation of the uterus most myomata also ascend upwards; as a rule this ascent begins in the 4th month, but in some cases the myoma does not leave the small pelvis until the very end of the pregnancy. It is therefore permissible also in the later months of the pregnancy and even at labour-term to hope for the wished-for change in the position of the myoma. On the other hand, subserous myomata inflammatorily adherent to Douglas's pouch, similarly nodules growing into the pelvic cellular tissue and some cervical myomata situated especially deep will naturally allow no change of position, and they are for this reason to be regarded as more unfavourable, seeing that they are more likely to cause disturbances at the labour.

2. Myomata show almost regularly during pregnancy an increase in their size which is in some cases more pronounced than in others but which reaches very often quite remarkable dimensions. Even purely subserous myomata are affected by this increase up to 3 or 4 times their original size. The cause of this growth lies partly in an œdematous saturation (*Gusserow, Nauss*) but partly also in a real muscular hyperplasia, analogous to the growth which takes place during pregnancy in the muscles of the uterus itself. (*Cornil.*) The serious infiltration offers, of course, to the palpating finger a greater softness than the originally hard swelling.

3. The change of form which myomata, especially the subserous tumours with more or less broad bases, undergo sometimes, is the assumption of a flat shape. The originally semi-spherical and markedly projecting protuberance becomes finally a saucer-like tuft, chiefly probably on account of the superficial spreading of the tumour-basis which forms as a matter of fact a portion of the uterine wall.

Other alterations especially the suppuration of the myoma, —which plays in the puerperium a not inconsiderable rôle— are extremely rare occurrences during pregnancy.

On the whole it may be said that pregnancy acts unfavourably on myomata of the uterus inasmuch as it leads to an increase in their volume, on the other hand the upward ascent, the softening and flattening processes which the myomatous swellings undergo have a beneficial influence especially on the approaching labour.

Influence of myoma on pregnancy—In the great majority of cases pregnancy reaches its normal end notwithstanding the presence of myoma-germs, without there arising any particularly disturbing complications. Nevertheless, numerous cases are known in which the influence on the part of the pregnancy was unfavourable and momentous.

Thus miscarriage or premature labour happens occasionally. The premature interruption of the pregnancy is accounted for in different ways. Sometimes the myomatous nodes penetrating the uterine wall prevent its uniform expansion, and in this way contractions may arise here and there. Then again,

the frequently co-existing chronic endometritis renders the development of the impregnated ovum impossible, hæmorrhages ensue which become very pronounced especially in sub-mucous and polypous fibroids and which bring about the expulsion of the fœtus. Finally, it is possible for a retroflexion of the pregnant uterus caused through a myoma to become the cause of an interruption of the pregnancy. (*P. Müller*).

The danger of premature interruption of the pregnancy in cases of myoma is, however, as *Hofmeier* has shown, not materially greater than in ordinary pregnancy. Even under absolutely normal circumstances every 8th or 10th pregnancy terminates on an average prematurely. *Hofmeier* explains the prevalent unfavourable estimation of the complication with myoma by the fact that it is the cases which take a bad course that authors prefer to publish or that impress themselves upon their memory, and also by the circumstance that some authors are too much inclined to at once attribute disturbances of any kind which arise during pregnancy and labour to the simultaneous presence of a myoma.

It is also said that myomata favour the formation of placenta prævia—perhaps, through the intermediary of the chronic endometritis. Cases of this sort are not exactly very rare.

Besides, the occurrence of peritonitic symptoms has been observed during pregnancy, partly through the twisting of the pedicle of the tumour (*Kleinhans*) and partly through the decomposition of the myoma. The frequently rapid growth of the tumour causes sometimes—though only rarely—complaints which may become so acute as to absolutely necessitate an operation. Large myomata of the fundus particularly, which press against the diaphragm can sometimes impair the respiration to a considerable extent.

Myoma and labour.—The influence of myomata on the course of labour has on the whole been formerly very much overrated. Of course, there must always be a number of unfavourable cases where the myoma narrows by its position the parturient canal so much that the passage of the fœtus is rendered extremely difficult or even impossible. But these are the exceptions. In the majority of cases the course of labour is not

affected by the presence of the myoma. Thus, for instance, I conducted not long since a labour at which there were situated in the body of the uterus one subserous myoma, twice as large as a fist and three smaller ones. With the exception of a slight delay in the dilatation-stage, which may, however, just as well have been due to the age of the parturient woman—29—the labour passed off quite uneventfully.

Even such cases in which the result of the examination made during the pregnancy, gives rise to a suspicion amounting almost to a certainty, that the labour will take an unfavourable course, often terminate surprisingly favourably. Nature acts here in different ways and almost at the eleventh hour the obstacle caused by the tumour disappears sometimes during the labour itself. In the first place the ascent of the myoma from the false pelvis which takes place as a rule during the pregnancy, may occur only during the dilatation-stage. An excellent instance of this kind is given in *Bumm's Manual of Obstetrics*: a swelling situated at the lower uterine segment and half the size of a child's head, obstructs the pelvic inlet at the end of the pregnancy, and prevents the head from entering; but while the dilatation of the cervix is going on the fibroid ascends spontaneously and makes room for the advancing head.

A further possible influence lies in the dissolution and softening of the tumour during labour: the venous congestion may produce in the myoma an acute œdema, so that in a few hours the previously hard tumor will become entirely compressible and allow the labour to go on spontaneously to its natural conclusion or at any rate to be brought to an end easily by the application of forceps or version.

Thus *Olshausen* among others describes a case in which multiple myomatous nodules filled the entire sacral cavity so that there was only a space of about 4-5 cm. left between the tumour and the symphysis. The child which corresponded to the last month but one of the pregnancy, was nevertheless born spontaneously, easily and alive.

The knowledge that these favourable influences may possibly assert themselves even at the very last moment, is in so far of the highest value as it will often deter us from superfluous

and frequently serious interference during the pregnancy and at the commencement of the labour.

In some well-marked and characteristic cases, however, we must be prepared to deal with considerable labour-obstacles right from the very beginning. Thus, for instance, when a large myoma of the cervix has grown far into the pelvic connective-tissue; also in those cases where a voluminous myoma is firmly attached to Douglas's pouch by pelveo-peritonitic adhesions.

Such a case I observed two years ago in the maternity-policlinic of the Charité:

Primipara, 37 years old, at the normal end of the pregnancy. The student in attendance reports that the child was born in foot-presentation but that he cannot extract the after-coming head. In examining the patient under an anæsthetic I find that the sacral region is markedly arched forward through a soft but apparently solid tumour as large as a fist and somewhat flattened. The tumour reaches upwards above the iliopectineal line. The head is quite above the pelvis, with the chin directed to the right; the child was dead. I could not succeed in displacing the tumour. The carefully executed attempt to extricate the head, as it was, through the narrow passage failed, so it became necessary to perform perforation. In the third stage the placenta had to be removed manually, a very difficult proceeding, in the course of which I ascertained that some more myomatous swellings projected into the cavity of the uterus as well. The obstructing myoma was a sub-serous one and adherent to Douglas's pouch.

That there was in this case a pelvic presentation is in accordance with the results of statistics on the position of the fœtus in utero. They are all alike in their conclusion that pelvic and transverse presentations are much more frequent in the presence of myomata. Where the pelvic inlet is contracted through the tumour being situated in the lower uterine segment, the head is pushed aside and abnormal positions are thus easily created.

The removal of the placenta manually is also a frequent necessity, as in the case described above. The presence of the myoma prevents sometimes the normal contractions of the uterus, hæmorrhages arise which it is often not possible to arrest, except by the manual removal of the placenta. If the larger myomata arch forward into the uterine cavity, this manipulation may, like in the above case too, be attended with the greatest difficulties. Even after the expulsion of the placenta, myomata may sometimes prevent the uterus from contracting properly and thus keep up the hæmorrhage.

Myomata and the lying-in period.—A very material diminution takes place almost constantly in the volume of the myomata during the lying-in-period, the serous infiltration of the tumour and the muscular hyperplasia undergo involution. In a large number of cases the tumour does not only regain the dimensions which it had previous to the pregnancy, but the diminution goes even further, and sometimes the palpating finger is unable to find any traces of the swelling. What has in all probability taken place in these cases is a fatty decomposition of the muscular mass. According to *Martin*, the new-growth undergoes under 'the influence of the puerperium the same process of puerperal involution as the mass of the uterus itself. He describes a case in which a myoma, twice as large as a fist, was ascertained in a puerperal woman; at the post-mortem made six weeks after the labour the contents of the myoma was found to have become changed into a fatty pulpy mass.

This process must be distinctly differentiated from the decomposition and puriform liquefaction which polypous or submucous myomata undergo sometimes during the puerperium. This happens when the tumours descend into the vagina; through the attenuation of the pedicle the vitality of the tumour suffers and under the influence of the putrefaction-bacteria present in the vagina gangrene ensues. The absorption of this purulent mass may in the further course lead to general septicæmia and death.

If signs of decomposition appear during the lying-in-period it is strictly imperative to remove immediately the morbid focus,

so as to protect the puerperal woman from the threatening danger of sepsis, that is to say, the myoma projecting into the vagina suspended from its pedicle must be excised or scraped out from the vagina, if this has not been done already at the confinement. Sometimes the question of the total extirpation of the uterus is naturally also bound to arise.

On the whole, however, it is best to postpone the projected operative removal of the myoma until after the complete involution of the genital organs. In the first place it is possible that the tumour may undergo spontaneously a considerable diminution in volume during the puerperal period, and secondly, the operation is at all events less dangerous after the lapse of the first six weeks than soon after delivery with its accompanying injury to the parturient canal and more or less numerous wounds in the genital organs.

Treatment of myoma during pregnancy and labour.—The tendency has recently been more and more to treat myoma expectantly. Whereas it was formerly a frequent thing to institute artificial abortion or premature labour in order to avoid the eventual dangers of pregnancy and labour, this practice has now been almost entirely abandoned. And rightly so! For the life of the child is thereby sacrificed or endangered, the patient remains with her tumour, and in very many cases the abortion or premature labour results besides in very unfavourable or even fatal complications: there is a considerable delay in the course of the labour-process, septic infection may occur, or decomposition of the tumour, or almost unstaunchable hæmorrhages.

If one is therefore compelled to interfere in the course of the pregnancy—and an indication for this lies only when the life of the mother is directly endangered or when the complaints caused by the situation or size of the tumour have become absolutely unbearable—the following measures come into consideration: amputation of pedunculated myomata, scooping-out of the more interstitial tumours from the uterine wall, or supra-vaginal amputation of the uterus if the child is not yet viable: all these three operations are to be performed abdominally. As a direct danger to life we must regard, for instance: peritonitic

symptoms or severe cardiac or pulmonary symptoms and signs of compression of the ureters.

In all other cases, however, it is preferable to await the advent of the natural labour, which in many cases where the soft parturient canal is during the pregnancy so blocked-up that no other course but Cæsarean section can be looked for as a solution of the difficulty, takes after all a normal course, thanks to the softening and spontaneous retraction of the myomatous lumps under the influence of the labour-pains or owing to the possibility of their reposition.

At the beginning of the labour-process the reposition of the tumour must therefore be attempted first. This should be done very carefully, with or without the use of an anæsthetic, and if necessary in the knee-elbow position. If this does not succeed after several attempts, there is still a hope that the myoma will ascend spontaneously or become soft. Where the tumours project like polypi into the vagina they should if possible be amputated if only for the sake of the puerperium. In some cases it is easier to scoop out the tumour from the vagina. Otherwise, the more advisable course in the case of the smaller tumours is to wait and to perform, if it becomes necessary, version, extraction by forceps, or, if it comes to the worst, perforation. It is, however, of the greatest importance to avoid severe compression of the tumour, as this favours decomposition during the puerperium.

But if the space is extremely contracted, Cæsarean section immediately succeeded by the removal of the swollen uterus is the more advisable procedure. The after-birth stage must be conducted particularly carefully on account of possible hæmorrhages resulting from the myoma; the prophylactic administration of ergot is always advisable.

Hereditariness of myoma.—From existing communications it would appear as if heredity is not altogether without some importance in connection with the origin of myoma; there exist quite a number of observations where myoma constituted a sort of family-disease, where one can therefore speak of a family-predisposition. Thus *Veit* reports a case where two sisters, a second-cousin of theirs, the mother of this cousin, the

mother of the two sisters, and a real cousin suffered from myoma, the four younger ones of these patients already at the comparatively early age under 24. *Beya* mentions a family in which 4 sisters, mother, grandmother and aunt had all had fibroids. Among 530 cases which *Engström* observed, he found 13 times uterine myoma in 2 or 3 sisters and sometimes also in their mothers. There are also many other analogous communications. It is not therefore going too far if we admit that heredity can play in myomatous disease a certain predisposing part.

Myoma and consent to marriage.—One will naturally not very often have occasion to have to grant to a patient suffering from myoma the medical consent to her marriage. Most girls marry at the beginning of the twenties, whilst myoma does not generally appear before the wrong side of 35.

Nor is it possible in view of the manifold character of the clinical picture which myoma presents, to lay down any precise regulations which shall guide the physician in the granting of this consent. We have to take into consideration in every individual case, the possibility of cohabitation, the chances of conception occurring, the probable extreme or absolute obstruction during natural labour, and also the disturbance in the general health occasioned by the myomatous disease, especially severe anæmia and pressure-symptoms as well as symptoms on the part of the heart. We must finally consider the possibility of removing by operation the myoma without impairing the function of the generative organs.

IX. Ovarian Tumours in Relation to Marriage.

I intend to discuss first in this chapter from the points of view of prevalence among married and unmarried women, heredity, sterility and sexual intercourse, the real new-growths of the ovary, and namely the parenchymatogenous (cystadenoma, carcinoma) as well as the ovulogenous (dermoid, teratoma) and the stromatogenous (fibroid and sarcoma). On the other hand, I leave out of account here the so-called retention-

cysts of the ovary which proceed from the preformed cavities of the ovarian follicle or of the corpus luteum respectively and which generally rest on a purely inflammatory basis. These are treated along with the other inflammatory diseases.

Significance of sexual life in the development of ovarian tumours.—With regard to the question whether marriage exerts a promoting influence on the development of cystomata or not, there exist various remarkable contributions. *Olshausen* found as against 1025 married, 601 unmarried persons with ovarian tumours, a proportion at which *Williams* also arrives from a very large material. According to the official Prussian statistics of 1883 (quoted after *A. Martin*), the proportion of single women to married women is like 100 to 549 in the third decade, and like 100 to 876 in the fourth decade. On the other hand, the figures of *Olshausen* and *Williams* show the proportion in women affected with ovarian tumours to be 155 married to 100 unmarried. These figures certainly justify the conclusion at which *Olshausen* arrives, that single women show a far greater predisposition to the disease than married women.

Olshausen shares the opinion of *G. V. Veit* and *Peaslee*, that women acquire through pregnancy and lactation, during which functions the activity of the ovaries, that is ovulation and menstruation, is suspended, a certain amount of temporary protection against the development of tumours. He assumes therefore that the menstrual congestion favours the development of ovarian new-growths.

According to *Bischoff*, "the ovaries are during pregnancy shrunken, dry, devoid of blood, and the follicles small, quite in accordance with the fact that the ovarian function is for the time being suspended."

But *Martin's* objection that in order to arrive at an objective

¹Translator's note: The author's reasoning is not very explicit, but he evidently meant to say that if the percentage of single women with ovarian tumours compared to the entire number of single women were the same or smaller than the percentage of married women with ovarian tumours compared to the entire number of married women, *Olshausen* and *Williams* could not have had so many cases of ovarian tumour in single women, seeing that there are considerably more married women than single women.

appreciation of this view we ought to know more about the fact of preceding labours, is doubtless justified. For among these "single women" there is many a one who has had one or more children. Among 1005 patients of *Péan* and *Martin* 554 had never gone through a labour and 451 had. But these figures, too, speak to a certain extent in favour of *Olshausen's* conclusion. Voluminous statistics entirely free from objections, but which it is, on account of the multifarious causes that may lead to sterility, very difficult to prepare, will, perhaps, throw more light upon the subject and especially upon the question whether regular and, above all, unrestricted sexual indulgence exercises any influence. So far there is no material of any considerable size at our disposal relating to virgins or prostitutes.

Scanzoni numbered among 97 patients with ovarian tumours, 45 married women. Of these 97 patients 51 had never conceived, and 16 had perfectly intact genitals. *Scanzoni* draws from this the conclusion, that abstinence from sexual intercourse practised until old age has been reached, and the absence of conception, produce a certain predisposition to the development of ovarian tumours.

In cancer of the ovaries, on the other hand, the opposite condition is generally observed. Marriage seems to create a sort of predisposition to carcinomatous disease of the ovaries (*Lerch, Rotenburg, Fontane*). *A. Martin* particularly found among his material an "almost striking connection between marriage and ovarian cancer." There were 48 married to 12 single women. The carcinoma occurred in these cases, like in the material of other observers, just as often in nulliparæ as in women who had undergone one or more pregnancies.

It must, however, be admitted that the figures are not yet large enough to be regarded as fully conclusive.

Ovarian new-growth and sterility.—*Boinet* (quoted by *Olshausen*) found among 500 women with ovarian tumours 390 sterile, and made on this basis the assertion that women with ovarian tumours are barren. *Olshausen* has already combated this opinion with the help of numerical proofs. That in cases of ovarian tumour impregnation is by no means excluded

is proved by the numerous occurrences of the combination of such tumours—which have already existed for some considerable time—with pregnancy. Even in far advanced double-sided tumours the possibility of conception still exists, though it naturally happens more rarely than in one-sided tumours. The occasional finding of fresh corpora lutea in almost entirely destroyed ovarian tissue also proves that pregnancy may occur as long as there remains a trace of ovarian structure in a state of functional activity. Not until the primordial follicles in the ovary have become completely degenerated—a condition which does not, however, occur particularly early—is sterility a necessary consequence. As a proof of the presence of active ovarian structure we may on the whole regard the continuance of menstruation.

If a one-sided tumour leads to sterility, the cause generally lies in displacement of the uterus or of the appendages, in a twisting of the tubes, etc. After the removal of the tumour, and consequently also of the indirect obstruction, it often happens—a fact which *Pfannenstiel* has also pointed out—that the women in question experience yet several pregnancies.

Reciprocal relations between ovarian tumours and pregnancy, labour and puerperium.—Ovarian tumours may undergo in the course of pregnancy, during labour and during the puerperium, very unfavourable changes, and they can in their turn produce an abnormal course of events in the process of generation. It is not only the real new-growths which come here into consideration, but also the so-called retention cysts, cysts of the follicles and of the corpora-lutea, to which the following observations apply therefore just as well.

The combination of ovarian tumour and generative processes is relatively rare. (*Flaischlen*, for instance, found among 17,832 labours at the Clinic for Women of the Berlin University complication with ovarian tumours 20 times, 5 of which only manifested themselves at labour), and for this reason I will deal very briefly with their reciprocal relations.

Spiegelberg and also *Olshausen* are of the opinion that a vigorous growth of the tumour takes place during pregnancy.

The abundant vascularity present during that time is supposed to have a promoting influence just as it acts promotingly on uterine tumours too. A number of individual observations in literature do not, however, correspond with this view, and *Löhlein* has, on the strength of his material, drawn the positive conclusion that ovarian tumours do *not* grow during pregnancy, and that their growth is rather impeded. For the function of the ovaries is suspended during pregnancy, there is an absence of the pre-menstrual congestion. *Pfannenstiel* points out, however, that in the first 3 months of the pregnancy, during which period an active congestion probably takes place in the ovaries through the hypertrophy of the corpus luteum verum, a more rapid growth of the tumour is quite imaginable. Various other authors, such as *Fehling*, *Bumm*, etc., incline more to the earlier opinion that it is at all events not yet possible to look upon the point as definitely cleared up.

A not insignificant number of ovarian tumours cause during pregnancy and labour no disturbances—this is especially the case as regards the smaller tumours which migrate upwards into the abdominal cavity along with the uterus. In other cases, again, the tumours remain entirely unaffected by the pregnancy, but for all that the possibility of reciprocal unfavourable influences is constantly present.

Thus the torsion of the pedicle occurs much more frequently during pregnancy (on account of the compression of the abdominal organs against one another) than at other times, according to *Williams* 3 times so often, especially in tumours situated in the abdominal cavity. The danger of rupture of the cystic tumours is also a greater one during pregnancy.

As to the dangers which the labour-act brings in its train, it is the ovarian tumours which lie wholly or partly in the small pelvis that are especially affected by them. They get compressed more or less severely so that they are apt to burst. This pressure acts in its turn unfavourably on the vitality of the tumour-tissue and in this way the entrance and further development of infectious germs is very much facilitated. During the puerperium this is apt to lead to suppuration. Soon after delivery and at the very beginning of the lying-in-period especially, when

the mutual compression of the abdominal organs is particularly great, there is a considerable danger in the possible twisting of the tumour round its axis with its well-known consequences.

On the other hand, ovarian tumours, especially the larger ones, can cause during pregnancy severe dyspnœa, and they can also bring about through pressure on the uterus miscarriage and premature labour. Out of *Martin's* 55 cases this happened in 5. If an ovarian tumour of some considerable size is situated in the small pelvis, the child does not, in the absence of artificial assistance, descend into the pelvis, and this may eventually lead to rupture of the uterus.

Treatment of ovarian tumours during pregnancy, labour and puerperium.—The artificial interruption of the pregnancy on account of an existing ovarian tumour, as recommended by older writers, is a futile procedure; the child's life is destroyed and the tumour with all its dangers remains behind.

A number of authors recommend as a regular proceeding, that as soon as the diagnosis of ovarian tumour and pregnancy is definitely decided upon, ovariectomy is to be performed, and namely, without delay, if such complications as torsion of the pedicle, etc., have supervened. The mortality among women after ovariectomy during pregnancy is not higher than after the operation in the absence of this condition (*Wähner*). But against that there occurs in 22% of the cases (according to *Dsirne*) a subsequent interruption of the pregnancy, and this is the more likely to happen the more advanced the period of gestation at which the operation is performed. In view of this result, as far as the children are concerned, the advice of *Fehling*—that ovariectomy is not always to be performed during pregnancy, especially where more than ordinary value is attached to the life of the child, as for instance, in primiparæ or in women who have had several children and lost them—deserves some consideration. But *Fehling* also recommends ovariectomy where the tumour grows rapidly or where torsion of the pedicle has occurred.

If one has therefore the opportunity to watch the patient carefully during her pregnancy, it is certainly the correct thing

to wait first with the ovariectomy—with the exception of such cases where the situation of the tumour in the pelvic connective tissue, or its fixation, makes it a matter of certainty that disturbances will arise at the delivery.

At the labour act of course the first thing to be done is to attempt carefully the reposition of the tumour. Hastening delivery by forceps or version is of little avail, as shown by the cases where bruising of the tumour has led to its bursting and suppuration. Against puncture of the tumour there also are serious objections. As procedures coming into consideration I regard only vaginal incision of the cyst with subsequent vaginal removal, and where this is not practicable, abdominal ovariectomy eventually with Cæsarean section.

Hereditary predisposition to ovarian new-formations.—If we bear in mind the comparatively frequent occurrence of uterine carcinoma and uterine myoma among consanguineous relatives; the small number of ovarian tumours in sisters or other blood-relations as compared with the frequency of ovarian tumours generally, is rather striking. *Martin* has collected a number of such cases from the literature. *Löhlein*, who reports a case of double ovarian cystoma in 3 sisters, is justified in asking that more regard be paid to the history of female blood-relations, sisters, etc., when taking down the patient's particulars, so that we may arrive at a decision whether and how far an inherited predisposition plays any part, or whether only an accidental and unimportant equality of the degenerative process in the female germinative glands is present in several members of the same family. So far we know very little as to the hereditary predisposition to ovarian tumours.

Consent to marriage in ovarian tumours.—The consent to marriage in the presence of new-growths in the ovary should be withheld. Apart from the fact that about 25% of the tumours are malignant, benign tumours can also create at any time conditions dangerous to life. The permission to get married must therefore in these cases be postponed until the proposed removal of the degenerated ovary has been carried out. Where, as it is frequently the case in small tumours, the diagnosis of retention-cyst cannot be made with certainty, but where

there is a possibility of its being a real new-growth, the same course must naturally be adopted.

On the other hand, there is no reason to oppose the marriage if the operative removal of a one-sided tumour has been successfully accomplished and the patient is in all probability relieved of her complaint, that is to say if the tumour was benign, a retention-cyst or a pseudomucin-cystoma.

Where the tumour was a papillary cystoma, the consent to the marriage should be granted only if the circumstances are particularly favourable, if the papillæ had not broken through the walls of the tumour, if there had been yet no inoculation onto the peritoneum, if it had been possible to remove the tumour unopened, and so on. But if the microscopical examination of the tumour shows to some extent carcinomatous degeneration, the marriage must, considering how frequently these cases do relapse, be prohibited unhesitatingly.

In cancer of the ovaries, marriage is not permissible even if the tumour has been removed on both sides, seeing how bad the prognosis of the complaint is, and how frequently relapses occur, though the tumours have been extirpated comparatively early.

If the case was one of double benign ovarian tumour and both ovaries have had to be removed, that is to say, if the patient has thereby been sterilised, marriage can only be permitted if after fully explaining to both sides the state of affairs, the impossibility of having a family and the probability that severer climacteric troubles will arise somewhat prematurely, the parties concerned are willing to join their fortunes in spite of the unfavourable circumstances. Where it had been possible to leave behind both tubes and a portion of the ovary, the marriage may be permitted on the understanding that the chances of conception are very minimal only.

The sexual sensation is not diminished by the extirpation of a one-sided tumour, but the removal of both ovaries has to all appearances a very unfavourable influence, the pleasurable feeling becomes extinct or materially less; only in 15 and 22.6% respectively of *Martin's* and *Pfister's* cases it remained unaltered after the operation.

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Abbreviations: Z. = Zeitschrift für Geburtshilfe und Gynäkologie. C. = Centralblatt für Gynäkologie. M. = Monatsschrift für Geburtshilfe und Gynäkologie. A. = Archiv für Gynäkologie.

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XXI

Diseases of the Nervous System in Relation to Marriage



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DISEASES OF THE NERVOUS SYSTEM IN
RELATION TO MARRIAGE

By Professor A. Eulenburg (Berlin)

1. *Neuro-hygienic and neuro-medical significance of the
married state.*

Marriage problems. Various conceptions of marriage.—Whoever approaches in any way the pathology of married life, if only for the purpose of investigating minutely, from the standpoint of the medical hygienist and practitioner, the effect of diseases on the right to contract marriage, on the course of married life and its prognosis, can hardly avoid dealing first critically with the much-discussed marriage problem as it presents itself before us in the form created by modern and civilised conditions. For according to the conception which one has of the nature and importance of the conjugal state as such, one's opinion as to the influence of diseases—and particularly of the highly important and frequent nervous diseases—on the disturbance and annihilation of the married union is bound to vary considerably. Hardly any other of the great institutions, sanctified by hallowed tradition, which humanity has known how to create for itself in the course of its historic existence, has been the object of such violent and radical opposition, of such complete rejection in these revolutionary and authorities-abolishing times, as marriage. It is hardly necessary for me to recall the views of the social-democrats, that three-million-party which vaunts itself in undisputed possession of the future, views represented in literature by *Bebel's* widely-circulated book "Die Frau" (Woman); it is sufficient to mention the teaching of philosophic and literary celebrities of the recent

past and of the present day which has dug such deep furrows into the modern school of thought. Even those who without denying altogether the justice of contrary opinions, as for instance the views on free love and marriage recently advocated with great eloquence by *Edward Carpenter*¹ and *Jacques Mesnil*,² are nevertheless more inclined to adhere to the historic tradition of conservative ideas, can regard the socio-psychological problem involved in the married state from 3 points of view, namely, from that of the husband, that of the wife and that of the child, the offspring. The State with its legal institutions has probably always appreciated marriage principally from the latter standpoint, that of the progeny, which was indeed bound to be the most important in its eyes, as an institution for the "generation of legitimate children"—(ἐν ἀρχῇ παίδων γνησίων) as the corresponding old Attic legal formula puts it. The Church was more concerned with the consecration of the matrimonial compact—but also more on account of the earliest possible acquisition of the child; these objects were attained by the elevation of marriage into a sacrament and by the sacramental baptism of the newly-born. If marriage was thus in the eye of the State a legal institution and in the eye of the Church a sacrament, it became in the eye of society which was gradually developing along with, and above, both of them mainly a business-transaction, a sort of life-partnership, and at the same time, as a matter of course, the legally-sanctioned and therefore the pleasantest, and for the women of the better classes the exclusive, method of "legitimate" gratification of the sexual desire. And so *Nietzsche-Zarathustra* had cause to sigh over what "far too many call marriage," over "this poverty of the soul in twos, this filth of the soul in twos, this miserable ease of the soul in twos," while exalting in marriage in its highest sense the will "to create the one Thing which is more than they who created it."

¹"Wenn die Menschen reif zur Liebe werden," Deutsch von *Karl Federn*, Leipzig, Hermann Seemann Nachfolger, 1903.

²Freie Ehe, Schmargendorf-Berlin, Renaissance-Verlag, 1903. Compare also *Ruth Bré*, Das Recht auf die Mutterschaft, 2. Aufl., Verlag der Frauen-Rundschau, Leipzig, 1903; *Ellen Key* über Liebe und Ehe, Berlin, S. Fischer u. a.

Amid all this strife and contention, marriage, humanity's great problem, has never ceased to attract the attention of far-seeing thinkers and observers from psychological, ethnological and sociological points of view. From the standpoint of jurisprudence and theology, of medicine and hygiene, of political and economic science, of anthropology and the history of civilisation, this subject which has always and equally interested and fascinated every new generation of mankind, has again and again also received every possible consideration. Sceptics like *Montaigne* and *Stendhal*, realistic descriptive writers like *Balzac*, idealists like *Michelet*, ascetic quietists like *Tolstoi*, and numerous others have devoted to it mind and pen; and what has been achieved on this point in romance and in the drama, which have from times immemorial found in it a predominant source to draw from, what good and doubtful literature has been created in extolling or discrediting the married state, would, if collected, fill not volumes but entire libraries. From the Books of Ruth and Esther, from the High Song to *Sakuntala*, from the Arthurian romances and the legends of St. Genevieve down to *Othello*, the physician of his own honour, from *Don Juan* to Goethe's *Wahlverwandtschaften* and *Madam Bovary*; from Euripides to Molière, Goldoni, the younger Dumas, Hebbel and Ibsen; from Boccaccio to Maupassant and Amalie Skram: what enormous transformations, what contrasts, both as to time and place, in the views respecting marriage, pass in review before our eyes in the giant-mirror of the literature of the world, like in Macbeth's witches' glass the endless line of kings from Banquo's blood!

Of all these opposing tendencies—which have only partly been really overcome—of all the rubbish which the stream of historic development is continually depositing in this direction, the effects on the contending opinions and feelings, on the ways of thought, diverging more than ever at the present juncture, are only too apparent. For what is marriage to-day, and in what light does it appear to a great many who think themselves, or possibly are, "modern"? To some, it is but a stale and antiquated legal institution, crawling along, like so many others, as an eternal disease. To others, a business, a profitable adjust-

ment in the exacting and unavoidable struggle for existence, a partnership between two egoisms involving the individual partners in as limited a liability as possible, and subject to as short a notice as practicable. Very few, probably, regard it yet from a religious-ethical standpoint, as the highest and most intimate personal life-long union desired by God and nature, as a school of mutual devotion and self-education for the protection and loving care of the chosen companion. It must be admitted, though, that, true to her traditions, the Catholic Church has up to the present day adhered firmly to the sacramental character and absolute dissolubility of marriage, whilst Protestantism has here also become entangled half-way, and almost all the States which pose as "Christian" have long since been compelled by reasons of opportunism to introduce civil marriage and to facilitate divorce. To the impartial observer of human frailty marriage with all its present-day defects and imperfections must appear as the lesser or the least of all the evils that can be imagined in its place, but nevertheless as an evil. To the modern autonomism which relies entirely upon itself, to the desire for independence which suffers and knows no limits, to the Promethean spirit which defies every moral and legal enactment, married life with the whole of the consequential altruistic or at least dualistic demands attaching to it, appears as something unnatural, something totally unintelligible, totally senseless and futile. The sensualist may find his view expressed in the old French rhyme: "Boire, manger, coucher ensemble, c'est mariage, ce me semble," a conception of marriage which, by the by, still receives a certain amount of official confirmation in the traditional separation-formula "mensa et toro"; satirical propensity may find unalloyed joy in *Logan's* sharp-pointed epigram: "Was ist die Ehe denn? Sie ist ein Vogelhaus. Die draussen, woll 'n herein, die drin sind, woll 'n heraus (What is marriage? It is a bird-cage. Those outside wish to go in, those inside wish to get out.) or in the words of *Talleyrand*—who married late and badly—"union de deux mauvaises humeurs pendant le jour, et de deux mauvaises odeurs pendant la nuit." No end of people have exercised their wit at the expense of marriage and poured cupfuls of more or less clever

sarcasm at it, from *Aristophanes* whom it is impossible to quote, to *Ludwig Fulda* whom it is hardly worth while to quote, and according to whom the "acute nervous disease: love" gets cured by the "mild cold-water-cure: marriage." We may also refer to *Oscar Wilde*, who says: "Men marry because they are tired, and women because they are curious; they are both disappointed."

Modern tendencies inimical to marriage.—

More serious, however, than these elegant and frivolous nothings are two attacking forces which proceed with full deliberation, though from two opposing camps. The one draws its ammunition from the armament of that extreme and unlimited individualism which is so strongly represented in the newer and newest literature, that autonomism which raises the own "ego" to the centre of the universe while scorning or despising every altruistic impulse as a silly sentiment. If this moral anarchism which denies on principle all social obligations and lawful institutions, and which aims at destroying society into atoms again, is in stupid self-deception shooting wide over the mark, and is bound, if persevering to a logical conclusion, to incur merciless cursing or ridicule in its attempt at "Uebermenschentum," it is nevertheless undeniable that our time particularly possesses an enormous number of problematic natures who are either in reality seized by so genuine and strong a craving for independence, or frequently affected by accumulating petty desires for unconstraint, that in the first of these cases they burst their marriage-chains, and in the second they constantly rattle at them, while subjectively they both feel them equally unendurable. To some of them *Zarathustra's* much-abused word may apply: "It is true that I broke my marriage-vows, but the marriage vows first broke me." To others, the saying of the same wise man: "Many short follies: that is what you call love. And your marriage puts an end to many short follies by a long stupidity." To these sayings we may as well add another: "Do not laugh at such marriages! Is there a child which has no reason to cry over its parents?"

If the disgust with marriage and the married state emanating from these circles finds its physiological and psychologi-

cal background in the unrest and nervousness of our contemporaries which arise from our modern over-culture, one feels, on the other hand, almost inclined, when observing the attack proceeding from the exactly opposite camp, to believe in an atavistic return to apparently long-since forgotten mental ways. These attacks originate partly from a moral command which asserts itself with morbid partiality and is opposed to all sense and nature, and which in some—and not the worst—individuals may amount to a world-forsaking and world-avoiding quietism and asceticism; the most conspicuous example of this we have in the pure and respect-commanding personality of *Tolstoi* and in his later literary productions. We have only to mention the much-read and much-discussed “*Kreuzer Sonata*” with its disastrous effects upon so many narrow minds. Of course, in laying down here and in other works sexual purity and abstention as an ideal demand, also in the case of adults including those married, *Tolstoi*, evidently misunderstanding a remark attributed to the person of Christ, allows himself to be influenced by that monastic tendency of the mediæval Church which forced celibacy upon the entire clergy as a higher and purer mode of life, and which went so far as to raise to the rank of a saint Henry II. on account of his reputed chastity during his marriage with Kunigund. But then, *Tolstoi* also lends his support to certain most modern aims and tendencies and to the watchwords of a pessimism and nihilism which border in part directly on the pathological. To give a most recent pertinent literary example, let me mention the systematic treatment of this “neo-nihilism” by *Kurrig*¹, whose opinion is to the effect that the negation of the will to live, as taught by *Buddha* and *Schopenhauer*, must find its adequate expression in the voluntary repression of the generative desire, and who consequently despises and rejects the procreation of children as an act of the highest immorality, as a cruel injury committed against the individuals brought to life, which cannot in any way be repaired.

Here we have therefore the complete antithesis to *Zarathustra*, who imagined that he saw in the child aimed at, the future

¹*Kurrig*, *Das Sexualleben und der Pessimismus* (Leipzig, 1897); II. (Dialoge und Fragmente), 1898.

"Uebermensch," the saviour. "I desire that thy victory and thy liberty shall long for a child. Living monuments thou shalt erect to thy victory and thy liberty." "Thou shalt perpetuate thyself not only onward but also upward! In this thou shalt be aided by the garden of matrimony." But in this neo-nihilism and its allied tendencies, as for instance in the abstention-theories preached in numerous works by *Dr. Norbert Grabowsky* and in the "reform-marriage"¹ recommended by an American lady, *Dr. Alice Stockham* of Chicago, we seem to have reached the limits of common-sense and understanding. This is hardly less so in the case of a recently-published work with high scientific pretensions ("*Geschlecht und Charakter*," eine prinzipielle Untersuchung von *Dr. Otto Weininger*)² which has gone so far as it is possible to do in misjudging and disgracefully slighting the female sex, and which arrives therefore at the result that absolute male abstinence is a necessity, that sexuality must be completely ignored; "man must free himself from sex, thus and only thus can he make woman free." A real castration literature! What is strange in this connection is that the ill-sounding voices of these masculine-non-masculine abstention-fanatics have now and then been capable of finding an echo among the occupants of the female camp.

Hygienic and educational effects of marriage.—In opposition to these and other similar modern currents of thought we must first of all hold fast to the conviction, trite though it be, that marriage with all its necessary human defects and imperfections has after all done a great deal for the material and moral improvement of mankind, and is doing so yet; that it is superfluous and senseless to argue about its justification, because were it possible to remove it by one decree to-day we should only have to reinstate it by another decree to-morrow, just as the French revolution had to do after abolishing the deity; and that here like in almost everything else the question is not to check the damage by a fundamental change, but

¹A new mode of sexual intercourse which excludes the "evolution of the highest excitation," substituting therefor ideal enchantment and visions of a future life!

²Vienna and Leipsic, 1903.

by a thoughtful amelioration, or in medical terms, to perform not a radical operation but to apply a conservative and at the same time relief-bringing and invigorating method of treatment. In this conviction we must not falter, even when attempting to lay down empirically the highly important and momentous relationship existing between the married state and diseases of the nervous system and to draw from it conclusions of a practical nature.

I may probably consider myself in agreement with many, and certainly not the worst observers, if I see in marriage as it should be, in this direction particularly, an undoubted preventive factor of the highest importance and not rarely one of cure as well: an incomparable and irreplaceable element of self-discipline and mutual education acting with an unconscious natural power, no matter whether it is that genuine love which "bears all and suffers all," or whether it is only a feeling of sympathy, of esteem or affection, or even nothing more than the influence of social consideration and familiarity, that plays the decisive part. Marriage is at all events, even under present conditions, a by no means insignificant power in the creation and multiplication of altruistic sentiments, and in its further action in the maturation of thought and of the will-power, in the development of the entire character. This individual-psychological, ethical-pedagogic value of marriage is unquestionably of the highest importance to both married partners, but principally to the wife. It may be said that for the man who enters as a rule the married state when already mature and hardened by education and the experiences of life, matrimony is also an excellent school of altruistic activity, loving accommodation to patience, considerateness and self-denial—at any rate it can and should be so; but in the case of the female spouse marriage only means full maturity, the completion and realisation of her own personality, which in the absence of marriage develops at any rate far more rarely and with greater difficulty, and then very often in the not exactly pleasant and sympathetic forms of old-maidenhood—although the latter is no doubt frequently unjustly reviled—as an unpalatable late fruit. For it cannot be denied that the physiological conditions of married life, physical love

and maternity, exercise upon the female mind still capable of development, a powerfully exciting and ripening effect, and that on the other hand their absence is generally associated with a somewhat insufficient formation of the character and of the personality, at least in certain directions. It must therefore appear the more strange that many, and even highly accomplished, representatives of the female sex both in Germany and other countries have recently exhibited inclinations approaching the above-described ascetic tendencies aiming at sexual purity and abstinence. Although the number of those women who have for selfish motives endeavoured to avoid the burdens of pregnancy and childbirth, the obligations of motherhood, has for some time now been rather large—it is particularly the American women of the upper classes who have often been reproached for this dereliction of duty—they were not at least on principle averse to the idea of physical love, provided it was surrounded by the necessary precautions; nor is it only during recent times that opportunities have arisen in the quiet of private life and in literary publications to meet female types who do not by any means look forward joyfully to the functions lying within the natural limits of the generative sphere, but who rather dread and avoid them, or regard them even with a certain amount of æsthetic and moral disgust. *Molière* has already described such types of women in "*Les Précieuses Ridicules*." Of course, they are not quite serious over it, they merely play at being disgusted with the horrid idea "*de coucher contre un homme vraiment nu*"; other dramatic forms of the same school, *Shakespeare's* Princess of Navarre and her ladies of the Court, *Moretto's* Donna Diana, and *Bernstein's* youthful fairy-queen, are only too ready, when the right man turns up, to change their views easily and rapidly. On the other hand, dramatists—and not only *Ibsen* in *Nora*, but almost a generation before him, *Gutzkow* in the heroine of his play *Ella Rose*, performed in 1856—have portrayed women who have rightly chosen to run away from their marital obligations and whose inner natures compelled them so to choose, because their own marriage did not satisfy them, because it appeared to them too narrow for their psychical development and for the desire to live their lives, and

because it became to them on account of this narrowness an unendurable agony.

"If marriage is too close, it becomes a curse"—these are the words in which *Gutzkow* expresses the last thought of his heroine in a letter addressed to Titus Ulrich; and with a similar phrase Nora also runs away from the doll's house of her married life. But what we, and especially we medical men more than others, often have an opportunity of seeing at the present day and of hearing from women's lips, is not only rebellion against mental confinement and subjection in the married state, but actual abhorrence and indignation against the exercise of its indispensable physical demands—and this not so much on account of a feeling of shyness or similar motives, but from totally different impulses pertaining to the region of newly-awakened desires for liberty and the eagerness to combat the natural prerogative of the male sex. Thus these objects seem to approximate accidentally those of the asceticism described above, but they resemble to a greater extent and in their foundation the aim of the individualism which recognises no obligations or authority but simply the autonomy of the personal ego. But like in the latter, so in the former, care will have to be taken that they do not assume too great dimensions, that the seed sown by these radical women's-rights champions be not more productive than that of their ancient precursors, the men-fighting amazons, the brave *Lysistrata* and the *Ecclesiastusæ*.

It were also possible to point out other directions in the modern woman's movement which partly deter from marriage and partly act on the married state as a dissolving and disintegrating ferment. It is sufficient to think of the growing tendency within the larger organisations of the women's movement, to take, in the conflict between the economic independence and importance of woman on the one side and her natural duties connected with motherhood on the other, a decided stand in favour of the former and so to extol their value and significance at the expense of the latter as to cause almost their total extinction; absolute precedence is claimed for "mental" work, as creating far higher units of civilisation than the allegedly lower duties of the household and of maternity. It must be admitted,

though, that highly cultured women such as *Laura Marholm* and recently *Marie Diers*, have protested against these mistaken and preposterous notions, and rightly pointed out that these supposed newly-created high units of civilisation are for the present of a very problematical nature, while the certainly desirable material independence of woman is not an end in itself, but must be regarded only as a preliminary in the fulfilment of the duties and obligations imposed by nature.

In the face of such misleading tendencies it must be distinctly emphasized that the duties and obligations which marriage brings to woman are of such a varied and comprehensive nature, that if properly understood and carried out, they offer to female ability the widest opportunities in almost every direction. If to some women the less desirable physical duties of married life appear to occupy the front rank, the inconveniences and burdens connected herewith will in the eyes of the more educated and thoughtful women be got over by the meditation that they are sacrifices which every one individually must bring for the welfare of the family, of society and the State in general, and that only in this way can the right be acquired to be recognised as a useful member of humanity and as one who is doing her share in the general process of development; these sacrifices are, besides, immediately repaid by the educational concern for the child and the personal devotion, which constitute a source of the highest and purest gratification and secure an irreplaceable, truly creative and living cultural occupation.

We thus arrive in this way, too, at a recognition of marriage, in which the rights and duties of woman relating to domesticity and motherhood are for the present still being realised in the most desirable manner. Thus, in whichever form we consider the subject, the result is not exactly an apologetic appreciation of marriage, but so far, one which carefully sifts all the pros and cons. Like hitherto, and like for thousands of years, marriage still presents the only practicable method by which the sexual life can be permanently ennobled, by which it can be made to serve altruistic objects and to fulfil higher ethical and social purposes; in no other way can the most powerful of all natural impulses be utilised for and subjected to the onward-

pressing development of civilisation as a driving force. What marriage, as an element of culture, has accomplished on the whole for the benefit of mankind is writ large upon all the leaves of history. What it means for the weal and woe of every one individually, he who knows how to observe and how to interpret what he has observed can see and find out daily for himself, or he can read in the columns of the daily press unsophisticated accounts of the dark side of married life, with its conjugal tragedies, conjugal errors and divorces. To a still greater extent, doctors and particularly specialists in nervous and psychical diseases, have opportunities, surpassing by far what they wish and like to see, of glancing into the most hidden corners of conjugal secrecy and of lifting the veil from mysteries which often endeavour by well-calculated deception to conceal shame and disgrace, frequently misery and disease, behind a glittering exterior and apparent self-assertion.

2. *Nervousness and Neurasthenia.*

Essence of nervousness and neurasthenia.—

We may consider it immaterial whether the two notions "nervousness" and "neurasthenia"—which are at all events closely related—are exclusively congenital abnormal forms of perverse reaction to the irritants of the outer world, or whether, as it has been recently suggested from various quarters, we are justified in regarding "nervousness" as an **ACQUIRED** anomaly in opposition to the **CONGENITAL** morbid weakness of the nervous system, usually resting on an hereditary predisposition, which goes by the name of "neurasthenia." There is no doubt that both these terms and conceptions date much further back than our generation—ignorant as it is of history—generally believes: while the notion "nervousness" is fairly equivalent to *Bouchut's* "nervosisme" or "état nerveux," to "névrose générale" or other such synonyms, we often come across the term "nervous debility" and its derivatives in the writings of German authors of the 18th and still more of the 19th century, fully a hundred years before its supposed American discoverer *Beard*.

It is well known that the expression "neurasthenia" or nervous debility does not exhaust the essence of the disease, since it brings into the front rank only the element of weakness, while leaving entirely out of account the no less important and conclusive element of morbidly increased irritability. In looking at the matter more closely we find that the irritation-threshold for sense-impressions in neurasthenics is to a certain extent depressed, and namely not so much the threshold of the real sensations, but rather that of the common feelings which are experienced in the nature of a "disinclination"—the *Schmerzschwelle* (pain-threshold) or better said the *Unlustgefühlswelle* (disinclination-sense-threshold). As a matter of fact, it is characteristic of neurasthenics that feelings of disinclination, negative sense-sounds of the perception, make their appearance already after relatively weak irritations, and that they distinguish themselves by an intensity and persistence out of all proportion. Experience has shown that this takes place particularly after irritations proceeding from organic feelings, from feelings arising in the body of the sufferer, which penetrate into the consciousness as intensified and long-lasting feelings of disinclination and give rise to most various sensations of anxiety and constraint, to firmly established fears and illusions, the characteristic "phobias" of the neurasthenics. If to the morbidly increased irritability of the sensory nerve-paths there is superadded an excessive tiresomeness and exhaustiveness of the motor nerves particularly, a most fruitful source is created for the production and dissemination of morbid disinclination-feelings. For mere physiological fatigue, and still more the pathological process of "over-fatigue" or "exhaustion," is accompanied by negative sense-sounds, by feelings of disinclination of a very pronounced character, and the reaction to irritation is in the over-tired cells and their neighbourhood, in accordance with the law of fatigued and dying nerves, far more intensive and extensive than after the irritation of normal non-fatigued and non-exhausted nervous organs. Such an abnormal mode of reaction would, judging from the causal connection, lead us to suspect the origin in a specific neurasthenic alteration in the nervous organs, in the principal elements of the nervous system acting

as receivers and conductors of the excitation (neuro-fibrillæ, according to *Apathy-Bethe*)—an alteration as to the nature of which, like with regard to the neuralgic and spasmogenic (epileptogenic, hysterogenic) changes we are, it is true, so far in the dark yet, but the gradual clearing-up of which we may justly look forward to, sooner or later, seeing what astonishing results have already been achieved in this direction in virtue of the constantly advancing improvements in the examination-technique. When this object will have been attained there will presumably be no longer any convincing reason for substantially distinguishing nervousness and neurasthenia as "functional" neuroses or neuropsychoses, from the organogenic or histogenic diseases of the nervous apparatus which are already known to rest on coarser and demonstrable changes in the substratum.

For the present, however, we are still obliged to picture to ourselves the mode of action of these supposed "neurasthenic changes" to a certain extent, at least hypothetically, from our also as yet very imperfect knowledge of the elementary processes taking place in the mechanism of the physiological nervous activity. We cannot of course enter here into the numerous pertinent older and newer explanations resting on chemical, mechanical or functional phenomena, but I wish to call attention briefly to the "energetic" theory of *O. Rosenbach*, which is especially applicable to the classification and treatment of these conditions. On the strength of this theory, with which we shall not deal here in detail, *Rosenbach*¹ distinguishes three main groups of nervous individuals, namely:

1. That of constitutionally nervous persons who are through a congenital and hereditary predisposition and through a wrong bringing-up at an early period, inclined to special disturbances in the region of the sensory and motor innervation, which make themselves apparent after the slightest provocation, who exhibit therefore permanently "an alteration in the principal activity of the nervous apparatus";

¹*Energotherapeutische Betrachtungen über Morphinum als Mittel der Kraftbildung. Deutsche Klinik 1902. — Ueber Nervosität und ihre Behandlung (nervöse Zustände und ihre psychische Behandlung). 2d edition—Berlin 1903.*

2. The group of individuals who are nervously exhausted only by an imperfect form of the activity, that is, through abnormally great physical or mental demands, either periodically or during the duration of these abnormal conditions of life; and

3. The class of weak-willed people, including those who become perversely innervated under the influence of wrongly-directed will-representations, and in whom according to *Rosenbach* there is no longer a question of somatic disturbances in the nervous organs, but of abnormal processes in the region of the purely mental activity (abulic insufficiency or psycho-motor regulatory disorder).

From a psychological point of view *Hellpach* in his recent remarkable work "Nervousness and Culture,"¹ thinks he has discovered the origin of nervousness in the excessive increase of a normal psychical process, the "contrast of sensation." By this is meant that contrasting feelings strengthen each other reciprocally, so that a sensic experience furthers the succeeding indifferent mood towards the direction of an opposite feeling. But whereas in a healthy individual the prevailing sensation appears more uniformly feebly accentuated and permits even after strong emotional interruptions comparatively slight and ephemeral contrasting phenomena, this is in congenital "neurasthenia" as in acquired nervousness quite different. The former lacks from the beginning the uniformity of sensation within the ordinary daily life; all impressions and recollections, even the most commonplace, manifest themselves in strong forms, and this increase takes place amid signs of intense sensation-contrasts, that is, amid rapidly changing humours of an opposite character. In this way the voluntary actions of these individuals also acquire easily something apparently "incalculable," while in reality they always remain adequate to the slight, but rapidly altering, state of the disposition.

¹In "Kulturprobleme der Gegenwart," edited by *Leo Berg*, 1902.

Ingenious and to a certain extent justified as this view is, it is, nevertheless, open to well-founded objections; at any rate it can hardly be regarded as a sufficient criterion of the nervous and neurasthenic conditions. The characteristic phenomenon in the latter is, on the whole, not so much the occurrence of contrasting feelings and contrasting dispositions, as rather the decided prevalence of disinclination-feelings, so that comparatively weak excitants which are ordinarily scarcely stimulating or even depressing, give rise to more or less intense and persistent disinclination-feelings, while the contrasting inclination-feeling is on the other hand entirely absent. If the neurasthenic receives an unpleasant letter in the morning, or if he reads something in the newspaper which causes him excitement or anxiety, this is, perhaps, enough to make him feel bad all day, and it cannot certainly be expected that he will immediately afterwards be seen in particularly good spirits, or full of life and happiness. Especially the uncalled-for anxious feelings which are so often characteristic of neurasthenia, the specific "phobias," lack as a rule completely just as much a sufficient cause—as they appear to arise more from abnormal sensitiveness of single organs, from abnormalities in the perception of the senses—as a subsequent extensive change in the feelings and the disposition. If the "agoraphobic" who is perfectly aware of his affliction returns home discouraged and depressed after every vain and renewed attempt to overcome his "dread" of crossing a square, a wide street or a bridge, where can we speak here—either before or after—of an "over-tension of the sensation-contrast" which could only consist in this case of an intensified joyous humour?

Nervousness and marriage.—No matter in which way we attempt to explain the essence of nervousness, we are bound to arrive from theoretical considerations as from practical observations to the conviction that the individuals so disastrously endowed by nature possess, according to the extent and

severity of this endowment, a more or less insufficient nervous-psychical equipment for the duties and objects of married life, or that they even lack completely under all circumstances the indispensable adjustability to it. If the peculiarities of the nervous-neurasthenic condition are often capable of causing serious disturbance in all the relations of the sexual life as such, in the domain of the "comparative erotology" (as *S. Jacobsohn* expresses himself), this applies to a particularly great extent to the tenderest, most intimate and, at the same time internally and externally firmest of all the intersexual attachments, namely the married state. And it is the nervous husband no less than the nervous wife, although different physiological and psychological influences are in each of them at work, that is unsuitable from the standpoint of marriage.

Common to and alike in both of them is first of all the absence of the already-mentioned adaptability which constitutes the preliminary condition and a fundamental requirement of marriage. They are both of them more or less incapable or unwilling to control themselves, to keep in check their morbid inclinations, disinclinations, their good and ill humours, each of them cannot or will not render to the emotions and feelings of the other that amount of regard, fond sympathy and consideration or even of just and proper appreciation which makes it possible for two different individuals who consider themselves entitled to the same privileges, to live harmoniously together. Such marriages can consist only of masters and slaves, oppressors and oppressed, of the dearly-bought and patiently-borne sacrifice of the one side or of the misery of both sides—at all events they are nothing but a caricature of conjugal intimacy, a grotesque copy of the reciprocal devotion of married life.

Those who know the passion-stories of such neurasthenic marriages, know that these sufferings often begin on the very day the marriage is consummated, and sometimes even long before that. The hyper-sensitive, weak-willed neurasthenic frequently finds it well-nigh impossible to make up his mind to get married, the subsequent determination to adhere to the decision taken or forced upon him in spite of constant doubts and fears—all this tends to make what should be the happiest days of one's

life a terrible and often unbearable episode. In my own practice I have often enough had to treat neurasthenics who only felt relieved of a great burden and, one might almost say, became men again, when they broke off the engagement to marry into which they had hastily entered, and given back to themselves and to their *fiancées* their previous "freedom." There is no doubt that a not insignificant number of broken-off engagements are due to the whims and fancies of neurasthenics who discover only after they have plighted their troth, that they have undertaken responsibilities the fulfilling of which is physically and psychically far beyond their powers, even if they do not moreover belong specially to the large sub-category of sexual "neurasthenics." Not infrequently this "solution" is preceded by a disconsolate hesitation hither and thither, lasting for years, because the individuals in question (the blame lies in most of these cases on the part of the man) have not the power of either fulfilling their promise or of summing up the courage to withdraw, demanded by the circumstances of the case, and torment themselves and their intended partners from a distance or during occasional interviews in a most exasperating manner, by speech and in writing. In those cases where this solution does not take place, where the marriage is after all consummated either in consequence of the vacillation of one of the parties or through the firmness of the other, or thanks to the persuasive powers of friends or for external reasons, etc., it generally turns out most unhappy, and, indeed, it cannot do otherwise. For the neurasthenic remains after his marriage what he had been previous to it—only in very exceptional cases can married life exert any considerable beneficial influence, such as hopeful optimists, among the medical men, too often dare to anticipate; this is at any rate the case in the more serious forms of nervousness and neurasthenia.

In the particularly severe cases which represent fortunately an extreme form of the disease, the matter may end differently and namely in a far harsher manner. We read and hear sometimes of suicides committed by prospective husbands—belonging as a rule to the upper classes—on their wedding-day, figuratively and even literally "on the threshold of their bridal chamber."

Such apparently quite unintelligible acts are as a rule explained away by the conventional and convenient "attack of sudden mental aberration" (perhaps, on account of the eagerly and violently anticipated married bliss?) which induced the unhappy man to lay hand on himself. Those medical men who have stood near such cases know, however, that they refer almost always to highly-strung neurasthenics who cannot think of another way of escaping from their unavoidable feelings of terror, their repentance, their self-reproaches and severe anguish, and who prefer the peaceful rest of the grave to the, to them, problematic "joys" of the bridal and conjugal bed. It is probable, though, as far as one can judge, that sexual motives play nearly always a part in these cases, such as for instance a fear of impotence, here and there also (supposed and real) homosexuality, so that we find herein the transition to the particularly frequent, and in their conjugal consequences especially tragic, forms of the typical "sexual neurasthénia."

Sexual neurasthenia.—The object, or at least the physical essence of marriage is in sexual neurasthenia far more interfered with than it is generally the case in the other localised (special) forms of neurasthenia, or in its universal manifestation. This applies particularly to the sexual neurasthenia of the husband, in whom the symptom of the neurasthenic weakness of the virility or "impotence" prevails in the great majority of cases as the one which predominates over, and determines, the whole clinical picture, whilst the other local symptoms, the disturbances in the genital sensibility and in the motor-secretory activity, the morbid emissions and erections, spermatorrhœa and prostatorrhœa, etc., recede considerably in constancy and importance as compared to this principal symptom.

There is hardly one among the large number of sexual neurasthenics who does not feel altered with regard to his sexual virility, and namely as a rule weaker, and the majority of them are, perhaps, influenced principally by just these sensations and the fears associated with them, to seek medical advice. On closer examination, however, this supposed weakness of the virility reveals itself frequently as a morbid alteration in the sexual desire, in the sexual libido, inasmuch as the latter is de-

ficient, absent or abnormal in a qualitative sense, directed into "perverse" channels. These radically different conditions of the altered libido and of the weakness of the virility are nevertheless, as is well known, often mistaken for each other, not only by the lay public but also by medical men, whereas according to their nosological value, and also from the therapeutic standpoint, they ought to be kept strictly apart. However, the importance of the absent or suspended libido (in the husband) is from the point of view of marriage by no means to be underrated.

The genesis of these anomalies can be deduced without any difficulty from the conception of the sexual neurasthenia itself, as that of a form of neurasthenia with a predominant, or for the time being exclusively prominent, genital manifestation, or exhibiting, in other words, symptoms of an "excitable weakness," of an excessive irritability and exhaustiveness in the region of the genital nervous apparatus. The psychical (psycho-sexual) disturbances and alterations connected herewith manifest themselves chiefly in anomalies of the sexual sensation which, corresponding to the general trait of neurasthenic disorders, appear to the consciousness as feelings of fatigue and pain with a predominating character of disinclination. The threshold of irritation in the sphere of the sexual sensation, too, seems depressed, so that relatively weak excitations are succeeded here also by a comparatively strong, full and persistent reaction, in which the negative feelings, disinclination and pain, appear predominately. Among the number of these psycho-sexual hyperæsthesias and dysæsthesias belongs also a disinclination for natural sexual intercourse, an increase in this disinclination amounting to psychical pain, its complication with feelings of anxiety and the phobias of neurasthenia proper. If these elements penetrate further into the imaginative life and take root there, the normal sexual sensations become weaker and associated in their course with constantly increasing inhibitions, there develops a sexual disinclination and

frigidity up to perfect disappearance of the ordinary sexual impulses, whilst in many cases there pour at the same time by way of ill-regulated associations, new or hitherto excluded and repressed ideas into the circle of the sexual imaginative life, filling the latter in a morbidly perverse manner with manifold pictures and stimulations arising from an unbridled activity of the phantasy. Herein lie very often the strongest incitations and impulses to onanism, to automasturbatory gratification, which neurasthenics frequently indulge in in preference to ordinary sexual intercourse, not only before the time of the regulated sexual life, but along with and after it, during married life, and at all ages, because it is not necessarily connected with any feelings of disinclination or anxiety such as are immediately associated with ordinary intercourse, and also because the incessantly working phantasy is constantly imagining new and not yet worn-out pleasurable excitements, or such which have not yet become repulsive.

To the same extent, however, and for the same reasons the desire also arises for the various forms of abnormal exercise of sexual intercourse—within and without the married state—because the latter not yet influenced by the tormenting feelings of disinclination and anxiety, hover before the phantasy as desirable inducements, including as they do the most extraordinary and severe psycho-sexual abnormalities and perversions (the relations between which and marriage are discussed in a separate chapter of this work).

Disturbances of virility in sexual neurasthenia.—As regards the special forms of the disturbances of the virility in neurasthenics, only very few cases present severe functional disorder of the mechanisms of erection and ejaculation in such a manner that the latter act differently and decreasingly either as to quantity or quality. This is for instance the case in the comparatively frequent anomaly of premature ejaculation (*ejaculatio præcox*), which is well-known and decried as an early stage of commencing impotence. If there is only a decline

in the sympathetic centre of the seminal discharge, erection can occur without subsequent ejaculation; if the erection-centre (which is according to recent researches also sympathetic) is weaker, ejaculation may take place without erection, that is, with the member flaccid and non-erected. If the two above-named centres are simultaneously functionally affected, the result is insufficient, flaccid and non-persistent erections—which disappear finally altogether—accompanied by scanty and finally entirely absent ejaculations.

All these forms which already denote a severer end-stage of pronounced exhaustion are usually preceded for some time by the above-mentioned condition of irritable weakness in the genital reflex-apparatus which manifests itself by premature ejaculation.—The number and extent of the potential disorders occurring in sexual neurasthenics are not, however, by any means confined to these manifestations; there are rather further alterations caused by the action of psychical factors which correspond to the conception of neurasthenia as a neuro-psychosis, and the influences of which, partly exciting, and partly regulating and inhibitory, are permanently transferred from the psychomotor sexual centres by centrifugal paths to the spinal and sympathetic reflex-centres of the genital apparatus. From the frequency and intensity of the psychical correlations pointed out above, we can explain how it is that we often have to deal in neurasthenic forms of impotence principally or even exclusively with the so-called "psychical" (psychogenic) impotence. The cause lies mainly in the inhibitory influence, which neurasthenic illusions and fears exercise upon the action of the erection-mechanism and upon the further accompanying reflexes of the intra-urethral discharge of the seminal glands, that is the "orgasm" and the ejaculation. In so far as the inhibitory representations are frequently direct results and issues of the disinclination-feelings which were associated with or accompanying immediately previous performances of sexual intercourse, they are as a rule phenomena of psychomotor inhibition on the basis of an excessive and abnormal psycho-sensory irritation, consequently genuine manifestations of "irritable weakness."

But these residual inhibitory representations produced by

former disinclination-feelings can, according to the special mode of origin and the seriousness and frequency of preceding experiences, be either of a more general kind, or limited mainly to quite special, and often only temporary and passing, single moments connected with some single event. Where this is markedly the case, we can in this connection speak of so-called "relative" and "temporary" forms of impotence—which are at the same time always also of a psychogenic nature. This explains the fact why impotence is present only under certain conditions or in certain circumstances (for instance in the natural form of sexual intercourse, but not in unnatural modes of sexual gratification) or with respect to certain persons (for instance, as it is frequently the case, in attempted intercourse with the wife, but not with a mistress)—("relative impotence"); also, why the *potentia cœundi* fails at times entirely, whilst at others there does not appear to be any or but very little diminution in that direction ("temporary impotence"). In "relative" impotence, therefore, the disinclination-feelings and the inhibitory representations arising from them are not associated uniformly with all kinds and forms of sexual gratification, but only with certain definite ones, or with respect to certain individuals against whom aversion or antipathy has arisen from satiety or some other cause. In the "temporary" form the inhibitory influences on the sexual impulses are only transient and periodical, at any rate not always manifest with an equal force. Relative and temporary impotence correspond therefore frequently to early stages which in the further course and development of the inhibitory influences may lead gradually to absolute and permanent psychical impotence. But that those apparently milder forms of diminished impotency which are in themselves not unamenable to improvement and cure, may also assume in the married state particularly a very considerable importance and give rise to lasting disturbances in the happiness of the married life, hardly needs any elucidation.

Sexual neurasthenia in woman.—In the sexual neurasthenia of the female sex, the phenomenon analogous to the diminished or absent libido in the man, is the diminution in the sexual sensation altogether, which manifests itself not only

by the absence of the desire, the libido, which, as it is, is generally weaker and tardier in development than in the male sex, but also and principally by an absence of the pleasurable feeling during coitus, by the failure of the "orgasm." These conditions are generally designated as frigidity, anaphrodisia, sexual anæsthesia, also as "dyspareunia" (*Kisch*); in reality, however, they constitute genetically and symptomatically widely separate anomalies, and only those can be included in the domain of sexual neurasthenia in which there is a question, from the beginning, of irritable weakness in the region of the genital nervous apparatus and of inhibitions proceeding mainly from psychical causes (neurotic anxiety of a purely sexual nature). In this connection painful local affections (chronic atrophic parametritis, according to *Freund*) particularly, as well as previous violent pain or disinclination associated with sexual functions (dysmenorrhœa, masturbation, defloration-pain) can by their re-appearance and combination with representations referring to sexual intercourse act disastrously as provoking and anxiety-producing factors. A very characteristic illustration of this condition is furnished by the picture of "vaginismus" which is by no means rare in young married women, and in which a morbid hyperæsthesia of the introitus vaginæ exists or is developed after the defloration and after awkward and impetuous first attempts at coitus, and is associated with reflex spasms in the muscles constricting the vaginal entrance and the upper portion of the vaginal canal (constrictor cunni, transversi, perinæi, and levator ani) rendering thereby successful cohabitation impossible. In the further course there appear not infrequently severe nervous general symptoms with such an extreme feeling of terror and such a pronounced aversion against every renewed attempt at conjugal approach that the latter must finally be discontinued altogether, defeating thus not only the physical object of marriage but causing in many instances the dissolution of the conjugal ties. On the other hand, it is happily often possible by an opportune interference and by discreet and tactful treatment, partly of a local nature and partly directed towards the general nervous condition, to obtain in these cases a removal of the obstacles to cohabitation and conception.

There are naturally other factors as well which produce in woman a state of absent pleasurable feeling (anaphrodisia) or a sort of torpor in sexual respects. There is, like the psychogenic impotence in man, a sort of psycho-sexual anæsthesia in woman, which arises by no means always on the strength of primary local diseases but rather often on a neurasthenic, and just as often on an hysterical, or on a constitutional and neuropathic basis consisting of these two; the border-line between neurasthenia and hysteria is in woman generally far less sharply defined than in man and frequently in a one-sided manner in favour of hysteria. In woman, too, there are conditions of psycho-sexual hyperæsthesia and anæsthesia which may be designated as "relative" and "temporary" from the analogy of the corresponding forms of male impotence; thus, for instance, if a woman experiences pleasure and orgasm from intercourse with her lover but not with her husband, or when she finds delight in certain abnormal (masturbatory, sadistic, etc.) acts of sexual gratification, or only at certain definite times (during the menstruation-period). Those cases are naturally the worst in which diminished virility, premature ejaculation or coolness on the part of the husband is accompanied by sexual hyperæsthesia or anæsthesia, by sluggish or absent orgasm in the wife, so that the latter remains ungratified in every way; from such combinations there may result under certain circumstances the most serious discords and conjugal calamities of the severest and most disastrous kind.

Attitude of the physician.—What should be, from the experience we possess, the attitude of the doctor in regard to the contraction of marriages by nervous and neurasthenic individuals, as well as in the presence of such individuals already married, or, if necessary, on the question of their separation?

It is clear that it is just as impossible here to lay down general rules of conduct as it is in other illnesses; every individual case must be considered and judged on its own merits. Nervousness and neurasthenia can in themselves constitute elements favouring and favourable to marriage, just as they may at other times render it imperative for the medical man to oppose the whole weight of his authority against the contemplated step.

And then it is as a rule not very material whether we have to deal with congenital and inherited constitutional nervous debility ("neurasthenia") or with "nervousness" which has been acquired sooner or later. Apart from the general problematic character inherent in this distinction, daily experience shows that those forms of functional neuroses arising after accidents which can comparatively with certainty be described as having been "acquired" late ("accidental nervous diseases" in the shape of post-traumatic neurasthenia and hypochondria, etc.), are just those which as a rule distinguish themselves unfavourably by severity and obstinacy and a generally unsatisfactory course of the disease. The medical opinion does not therefore depend, so much as it often seems to be assumed, from the presence or absence of a congenital or possibly inherited family-predisposition, etc., but rather from the degree, extent and severity of the disease, from individual factors such as temperament, character, occupation and social position, and often, of course, also from the pecuniary means, the willingness and the patience to undergo a suitable mode of life and a rational course of treatment. This applies in a special measure to the sexual form of neurasthenia, particularly in man (as in woman this form of neurasthenia is before and outside the married state only exceptionally recognised and treated accordingly). In such cases, and where there is a tendency to neurasthenia at all, even some doctors still adhere to the erroneous and not infrequently disastrous view that marriage, in fact as soon as possible, is to a certain extent to be recommended warmly as a prophylactic measure. This is particularly the case as regards habitual masturbators who, it is well-known, furnish a large contingent of the sexual neurasthenics. Such a conception and recommendation of marriage as a protective and preservative measure in neurasthenics, and especially in sexual neurasthenics, I cannot, on the strength of an experience which as I have reason to believe is exceptionally wide in this field, accept at all. We know for a fact that marriage does not even protect against onanism (this applies also to sexually neurasthenic women); it does not cause the disappearance of an existing inclination to onanistic self-gratification—especially to "psychical" onanism—if this inclination is

considerable at all and has existed for some time;—or else this disappearance is only temporary, because individuals thus inclined soon exhaust the pleasures of married life and find them monotonous, whilst the delights of the phantasy assume constantly changing forms and diversities which promise no end of variety; it is not therefore likely that such people can be deterred in any way by the church or the registrar from seeking new manipulations in the form of illegitimate sexual intercourse. Besides, a large number of neurasthenically predisposed individuals lack, as we have seen, the psychical accommodativeness, the faculty to devote themselves to some other personality or at any rate that degree of considerateness and endurance which constitutes the indispensable condition of an harmonious or even peaceful consummation of the conjugal partnership. It is only after a minute inquiry into the conditions and character of both parties that marriage ought therefore to be permitted to obviously neurasthenic persons, but under no circumstances must matrimony as such be praised and encouraged as an effective remedy.

But where, as it frequently happens, such marriages are concluded nevertheless, they will during their course often present to the keenly observing doctor who possesses the confidence of his patients, opportunities which will justify or even necessitate his interference as adviser and succourer. Sometimes he will come across clumsy husbands or inexperienced young wives—it must not be forgotten, though, that there are also inexperienced husbands, and these are almost the worst!—and it will be his duty to instruct them on the sexual-hygienic conditions, possibly even on the technique and the mode of performance of sexual intercourse, and to impart to them the necessary information applying to their individual cases. Sometimes he will have to offer cheering and encouraging suggestions, at other times to calm and pacify one or the other of the married partners, now and again to recommend mutual tolerance and considerateness and to act generally as a reconciler and peace-maker. Regarded as a neutral person and almost as a creature without sex, the doctor cannot escape playing in modern marriages the rôle of a father-confessor of former times—as *Tolstoi* reproaches him in

the "Kreuzer Sonata" rather coarsely and unjustly! He is hardly in a position to extricate himself altogether from the responsibilities arising in this connection; but, on the other hand, he needs a great deal of tact and cautiousness so as not to incur any blame, and particularly must he be careful in the case of jealously disposed husbands not to give them cause to suspect that he is carrying on an intrigue with the wife—a suspicion which can easily take root and lead to most serious results, as it has frequently been known to happen in paranoics whose jealous mental fabrications may develop into a regular jealous mania. Finally, the doctor can scarcely refuse his assistance as far as his position permits or compels him, in obtaining where such a neurasthenic marriage has through the fault of one or both of the partners become irreparably shattered, the proper legal dissolution, in which case he must say to himself that he is doing a good and useful deed, and that an "end with terror" is here also better than "terror without an end."

3. *Hysteria.*

Essence and causes of hysteria.—In the second great neurosis which is eminently peculiar to the female sex, namely hysteria, we are both as to etiology and clinical pathology on still more debatable and uncertain ground than in neurasthenia. Since *Hippocrates* and *Soranus* down to *Charcot* and *Gilles de la Tourette*, down to *Breuer* and *Freud*, *Moebius* and *Binswanger*, many theories, or rather speculations, have been proposed as to the nature and causes of hysteria, but very little in the way of positive results has been achieved in this direction. The controversy is still raging undiminished—as shown among others by the discussion at last year's meeting of naturalists and medical men in Kassel—between gynæcologists and neurologists on the one hand, and hardly to a less extent between the specialists engaged in the various branches of medicine on the other. It is true that we do not hear any more to-day about the "uterus furens" of the ancients; but for all that, very many gynæcologists including some highly eminent men are

still under the spell of the old opinions, as are also a large number of general medical practitioners (not to mention the lay public) who are yet clinging to the belief that they can cure the "eternal woe" of woman from the one well-known "point." That this belief may in the course of time's changes become realised in the shape of a mobile and uncomplicated, or complicated and fixed retroflexion, of an atrophic chronic parametritis or disease of the appendages, etc., is perfectly immaterial.

But the view that influences may proceed from local diseases in the generative organs of woman, which give rise directly or reflexly to hysteria—this opinion which has to some extent prevailed since the oldest times almost with undisputed authority, but which has gradually lost in reputation on account of the growing scientific aspect of the matter—must finally disappear from the medical mind. It rested partly on insufficient and superficial, or wrongly interpreted, observations, and partly on a tenacious, but nevertheless mistaken, speculative conclusion, and is not without its dangers in influencing the attitude of the medical man or the psychiatric-forensic judgment, especially in severe cases of hysteria.

The origin of hysteria, like that of the other great neuroses (neurasthenia, epilepsy, etc.) depends, of absolute necessity, upon the presence of a neuro-psychical constitutional weakness or constitutional anomaly, which finds its organogenic basis as a rule in congenital (and partly inherited and degenerative) predisposition-faults of the central nervous system or of its functionally most important portions. More rarely it is acquired later in life through special lesions affecting the nervous system in a severe manner (for instance, in accident-neuroses). On the other hand, the outbreak of morbid processes belonging to this category is naturally often influenced also by the various organs and systems of organs in the body. In so far as the processes in the female generative sphere are concerned, this takes place more by way of the psychical representations of the organs belonging to this sphere, as it is here a question of irritation and condensation of imaginations, which give rise to morbid projections and manifestations at the periphery of the body, and which act therefore pathogenically in an intracentral

psychical way. There is consequently, just as there is a sexual neurasthenia, also a form of hysteria which can be distinguished and defined as sexual, inasmuch as the predominant pathogenic representations are derived mainly from the sexual sphere and they also manifest themselves accordingly by localised and fixed morbid phenomena in the region of the genital organs. Included in this class are probably very many (though by no means all) cases of hysteria which develop during the married state itself and in connection with the peculiar physical and psychical conditions of marriage.

Diagnosis of hysteria.—To a less extent even than in neurasthenia can a single symptom or group of symptoms, of which several different ones have been described, be regarded as "pathognomonic" in the clinical diagnosis of hysteria. Such a decisive value cannot be attributed to the absence of the conjunctival and pharyngeal reflexes, or to the—rather infrequent—increase in the knee-jerks, nor to the wrongly so-called "ovarism," or to any other reputed "stigma." All these and numerous other symptoms can be present or absent in hysterical individuals, which is frequently a question as to whether they have been suggested into them or not; there would probably, for instance, be no ovarism if it had not been dinned into the patients for the last thirty years, and as a matter of fact various observers have found "ovarism" in totally different places which have as a rule nothing to do with the ovaries. There are no immutable hysterical stigmata, there are only more or less frequently occurring manifestations in hysterical people (produced, as already stated, psychogenically) in the sensory, motor, vasomotor, secretory and trophic regions, and along with them also many complications, not easily overlooked, which rest on all sorts of genuine organic changes either accidentally or in consequence of a disturbance in the general nutrition.

Otherwise the diagnosis of hysteria depends in the first place entirely on a prolonged clinical observation, and on the thorough knowledge of the whole psychical and moral character of the patient. It must never be forgotten that hysteria is in reality a psychosis upon which the neurosis—if we wish to distinguish between these two terms—seems, so to speak, to be seated only.

The observation of the frequent, and often sudden change in the clinical aspect—in the place of which, however, there may be noticed an extraordinary persistence of one or more symptoms—the detachment of even the severest functional disorders from corresponding local alterations, the incoherence and apparent arbitrariness of the combination of symptoms, the observation, further, of intercurrent slight and severer attacks, and above all the study of the hysterical character with its morbid inclination to suggestion and auto-suggestion, its mutability, capriciousness and incalculableness, its phantastic deceptiveness, its impulsiveness and weakness of the will-power—all these signs are in a given case of greater utility in arriving at a diagnosis than dubious and ambiguous single symptoms. At any rate one must not be too liberal with the diagnosis of hysteria. Genuine and real hysteria is by far less frequent than the medical profession generally believes (it is often confused with nervousness and other neuroses of women); it rests as a rule, like genuine neurasthenia, upon predisposition-faults in the brain, and is often associated with an inclination to other neuroses and neuro-psychoses (neurasthenia, exophthalmic goitre, hemicrania, epilepsy, etc.) and even to organic diseases of the brain and spinal cord (sclerosis, progressive muscular atrophy, etc.).

An ingenious young medical psychologist¹ thinks he can characterise hysteria above everything else by the phenomenon of "docility" (*Lenksamkeit*)—which term he prefers to the horrid foreign word "suggestibility." But the translation is in itself not quite appropriate, and the deduction by analogy of the notion that the waveringness of "hysterical" crowds applies also to the nature of single hysterical persons, is unfortunately untenable. The husbands of hysterical women, as well as their doctors, would surely be very happy if they—the patients—were to distinguish themselves by a high degree of "docility"; but the husbands will hardly feel inclined to admit that their hysterical better halves, and the doctors that their more or less fair clients, are endowed just with this quality! As a rule the matter is

¹Willy Hellpach, *Nervosität und Kultur, ein Kulturproblem der Gegenwart*. Vol. VI. Berlin, 1902.

totally different, because hysterical women, though they are uncommonly "suggestible," are, however, from the beginning governed by an auto-suggestion which has become firm and rigid, and only in exceptional cases and under particularly favourable circumstances can they be ruled by an external suggestion which possesses yet any influence and is consequently capable of overcoming the power of the self-suggestion. If individual hysterical persons were as "docile" as the crowds that are influenced, say, by a popular orator, as for instance the irresolute "Roman populace" in Julius Cæsar by the speech of Mark Antony, the treatment of hysterical patients would be a real pleasure and not as it has always been regarded, and as it only too frequently is, a "crux medicorum."

Hysteria in relation to marriage.—In approaching somewhat more closely the relations between hysteria and the married state we are confronted rather sharply by two points of view, namely the influence which marriage itself possibly exercises upon the origin of hysteria or at any rate upon its becoming manifest, and the influence which an existing and highly developed hysteria visibly exerts upon the course of married life, upon the manifold phases of the conjugal drama.

Regarding the first point, all those injuries physical as well as psychical may come into question as causal or provoking factors, which are directly or indirectly associated with the married state. Of these the psychical ones are probably unequally more important. We know that *Breuer* and *Freud* have in their interesting monograph¹ on this subject attempted to explain the origin of hysteria in all individual cases by a definite psychical trauma which has not yet completed its reaction, which is supposed to be of a sexual nature and which has frequently exhibited its effectiveness already before marriage, through the first suggestion of matters sexual in a pure virginal mind producing a desire for resistance, a mixture of fearful anxiety and sensual excitement. Now there can be no doubt that marriage is a particularly fertile source of such psychosexual traumata, and this

¹Studien über Hysterie (Leipzig and Berlin), 1895. — I have been able to demonstrate beyond a doubt such an origin (or outbreak) in a few particularly severe cases of hysteria in children at about the age of puberty

influence may commence to exert itself on the very first day, or better said, in the very first night. One cannot help agreeing with the two above-named authors when they express their astonishment—although somewhat coarsely—that the “first night does not act more often pathogenically, considering how often its object is unfortunately not erotic seduction but rape.” Various circumstances come here into play; besides direct roughness and brutality which are after all comparatively rare, we come across physical and moral awkwardness or inexperience, the result of which is want of gentleness and tact on the part of the husband who does not understand, or who considers it superfluous, that the female person handed over to him must be gradually educated to a sensual feeling and joint-gratification. This inexperience or this want of tact and understanding which arise as a rule from a regrettable misjudgment of female feelings and sensitiveness, from a psychological helplessness in the presence of a woman, make themselves felt, of course, not only at the beginning of the married life but very often also subsequently in connection with its sexual relations, so that to a certain extent there is some truth in *Freud's* assertion, highly exaggerated though it be, that “the great majority of severe neuroses in women have their origin in the conjugal bed.” We can at any rate admit its justice only if we apply it not merely, like *Freud*, to the “psychical traumata” but also to the physical dangers immediately associated in numerous cases with sexual intercourse, such as painful hurts, injuries, infections and the secondary effects of all these conditions on the nervous system.

At all events, there remains as the principal and justified portion of *Freud's* views on this subject the circumstance that the psycho-sexual factor plays an extraordinarily important part in the production and provocation of hysterical processes, and that uncommon significance attaches from a prophylactic standpoint to a more or less adroitly and carefully conducted education of the female sex in sexual matters. For, as we shall soon see, a deficient or absent sexual sensation or one which is directed into abnormal channels, as it is often the case with hysterical people, can also endanger most seriously the happiness and harmony of married life.

Education of the young.—In this respect great mistakes are often committed in the education of young girls, by telling them either too much or too little at the wrong time or in the wrong place, and in a wrong non-discriminating manner. The beginning of puberty, the first, only slightly noticeable, indications of the awakening sensuality demand in growing girls even more so than in boys, far more serious attention than parents and educators are as a rule wont to devote to them. Sensuality as a sexual feeling is in normally constituted children quite dormant; it only separates itself more distinctly from the complex of loving and respectful feelings which the soul of the child experiences towards those to whom it stands in intimate relations, simultaneously with the development of the sexual organs themselves. Just at that time it is therefore very important in which manner the sexual life is awakened from its sleep and how the still half-child-like confined soul is enlightened both with regard to itself and with regard to a world of feelings which are new and unknown to it. A great deal of attention has recently been given at meetings and congresses to this subject of how the young should be informed on sexual matters, but unfortunately it cannot be said that the opinions expressed on those occasions have distinguished themselves by lucidity, or even that they were only to a certain extent clear. Scholastic authorities will in many cases have absolutely nothing to do with such instruction (and least of all in the case of girls); nor are fathers and mothers less opposed to it, either because they feel how incompetent they are to undertake such a duty or because they have an objection to robbing the innocent maiden's soul of its sweet simplicity—a fear which is in many cases quite superfluous. It must be admitted, though, that the task is by no means easy of execution, and at all events capable of being carried out individually only; but then one would think that one has a right to demand from parents and educators that they should be intimately acquainted with just this individuality of the children in their charge. There are youthful characters who can absolutely dispense with such teaching, who seem to know more than is good for them, and in whose cases a similar experience awaits the carefully-proceeding teacher as that which befell the methodical father "*Bieder-*

meier,"¹ who was trying to impart to his daughter the secrets of sexual life by means of the anthers and pistils of plants, and to whom the blushing maid whispers in reply: "Gewiss, papa! Es scheinen sich im ganzen, Auf gleiche Art wie ich's vom Menschen weiss, Die Blumen offenbar und Tiere fortzupflanzen." (Of course, papa! It seems, on the whole, that flowers and animals reproduce themselves in a similar way as I know it to be done by human beings.)

On the other hand, there are differently constituted natures whom one cannot handle too carefully and from whom it is necessary to keep as far as possible everything that might further the awakening sensuality, and namely not only at the time of the commencing maturity but also for a long time afterwards. For this reason greater attention than is generally done, ought to be paid to the books read by young people. But this should by no means be done in a one-sided manner, that is, not everything which might act as sexually "enlightening" and therefore, necessarily, according to a pre-conceived absurd notion, excitingly, must under all circumstances be absolutely condemned. Over-cautious parents and governesses have been known, under this pretext, to keep from their grown-up daughters or charges, even such literature as the Nibelungenlied and Gudrun, Don Carlos and Faust. On the contrary, it is the silly stuff which describes all the conditions of life in wrong and ridiculously exaggerated colours, and which forms the staple literature of the growing youth that must be discouraged by every possible means. It is by reading this trash that girls principally form an extravagant, senseless and unfounded opinion of men which they take along with them into their subsequent every-day life, and which gives rise to pseudo-ideal expectations that are often the cause of hasty and sad marriages as well as of disastrous disappointment in married life.

Influence of the husband.—Thus we always come back to the male partner; with a little variation we might say here: "cherchez l'homme." As a matter of fact, the husband is (often innocently) the cause of his wife's hysteria during mar-

¹"Aufklärung" in Jugend, 1903. No. 50.

ried life, or at least partly responsible for it. She may have married him without love, from selfish motives, out of pity, or "chosen" him for some reason or other; he may not be coming up to her ideal, she may have thought him different or seen him through a dream, and now, being disappointed, she may consider herself deceived, which perhaps she is in fact; he may not command her respect, may not understand her, may not do enough for her, may not look after her sufficiently, may become in the course of time quite indifferent about her, as she is, perhaps, about him—all this and much more like it may break out at the first opportunity and become the provoking cause of severe hysterical phenomena, of single attacks as of a permanent manifestation of hysteria. Physical causes may contribute their share and add to the indifference or dislike, so that both sides no longer derive anything from the conjugal act—at any rate not gratification—which however they find, perhaps, in illicit intercourse. The further consequences as regards the husband have already been mentioned in the preceding chapter; as to the hysterical wife, she often has recourse to seduction by "another" (which means a lover), in some cases to the adoption of masturbation and under modern conditions not infrequently to homosexual gratification, which after all is only reciprocal onanism. The hysterical wife is now "*femme incomprise*" and then "*femme adultère*;" and the unfaithful wife is often at the same time hysterical. For the hysterical wife not infrequently becomes unfaithful, not from erotomania, but in order to experience a new sensation, to excite and occupy her senses and her phantasy, to punish her husband, or she does it out of mere capriciousness, from absence of will-power and from all sorts of dark motives which fall into the region of the unconscious, but which are somehow connected with the psycho-sexual trauma.

Defective sexual sensation in woman.—But hysteria may have a calamitous effect upon the course and issue of a marriage from an almost contrary cause as well, namely if it is, as frequently happens, accompanied by a defective sexual sensation (sexual hyperæsthesia and anæsthesia, anaphrodisia, dyspareunia), or if the latter constitutes rather an important

symptom, a part-manifestation of the hysteria. It is here principally a question of the absence of the pleasurable feeling, of the orgasm, during cohabitation, whilst in some other cases the sensation, though apparently not entirely absent, comes on only in a very weak form and after some delay. The cause of this is a very variable one, and it may be of a local or general, physical or psychical nature. In so far as hysteria comes here into action, it may under circumstances amount to a diminution or extinction of the sensibility of the vaginal mucous membrane, judging from the analogy of the hysterical anæsthesia of other mucous membranes, of the palate and pharynx, nasal cavity, etc. But the trouble may also lie principally or exclusively in the psychical region and then run concurrently with the above-mentioned factors, with awkward, imperfect or perverse exercise of the sexual intercourse by the husband or indifference and dislike towards the latter.

Sexual anæsthesia in woman is in itself nothing rare; an eminent Russian practitioner, *Gutzeit*, goes so far as to assume (from his experiences obtained in Russia) that it occurs in no less than 40% of all the cases. This is probably too high a figure or at least applicable only to special conditions.¹ It must, however, be admitted, that even patients who have been married for many years and who can point to several products of the conjugal "joys" in the shape of a numerous family, frequently confess to their doctors that they have never experienced the slightest feeling of pleasure during coitus. This may be due partly to defective inclination, to the absence of development in the specifically erogenic zones (clitoris, introitus vaginæ, etc.) or to insufficient irritation of these zones by the manner employed in the exercise of the sexual act. As far as hysterical women are concerned, however, not much credence must always be attached to their statements respecting imperfect pleasurable sensation during coitus. They boast in this matter just as they do about all sorts of other possible peculiarities. They like to pose as victims, as martyrs of married life, and no less are they fond

¹See *Otto Adler*, *Die mangelhafte Geschlechtsempfindung des Weibes* Vienna, 1904.

of deceiving the doctor, of misleading him, or if he does not let them do so, of timidly admiring his superior sagacity. Besides, the old controversy which Zeus and Hera brought before the tribunal of Tiresias as to whether the man or woman experiences the greater delight during coitus, is notoriously not as yet "finally" settled.

The sexual anæsthesia of the wife can, like the impotence of the husband, also become a source of conjugal strife and collapse, either because the husband tires of the wife's passivity which hurts his self-love and reacts finally paralytically on his desire and virility, or because this anæsthesia is, as is frequently the case, accompanied by sterility, of which it is looked upon as the cause, and condemned accordingly. The possibility of such a causal connection appears in fact in some cases as not altogether excluded, since—a circumstance pointed out by *Kisch*—a strikingly rapid reflux of the semen from the vagina is observed sometimes in dyspareunia, perhaps, because of the absence of the reflex contraction of the vaginal sphincter and of the organic vaginal musculature.

Medical attitude.—The physician is in the presence of these conditions not altogether powerless. He can often interfere here beneficially and helpfully by strengthening the sensibility through local remedies, by regulating in a suitable manner the sexual intercourse, by removing if possible other causes of the sterility, and by furthering and reviving the declining affection between husband and wife through recommending abstinence or a longer separation—a journey to some watering place, etc. For the rest, the "treatment" of an hysterical marriage must consist mainly in its "prophylaxis," respecting which a few valuable indications can, perhaps, be derived from the above observations. The fully developed severe forms of hysteria can in some rare cases be influenced by means of *Freud's* system of "complete reaction," by hypnotism or in any other way with anything like lasting success, only at the hand of experienced and confident psycho-therapists, and even by these solely under favourable circumstances. That gynæcological measures, pessaries, operations against retroflexion, massage, even castration, etc., can achieve in genuine hysteria more than transient

and illusory success, I am, judging from numerous personal observations, decidedly inclined to doubt.

Under these circumstances it almost appears strange that so many marriages of hysterical persons last until their natural end and are not dissolved long before that; but it would seem as if nature has happily endowed the generality of husbands of hysterical women by way of compensation with so much placidity and meekness, such self-deception, and above all such unmanly patience, that they appear as if predestined for their severe ordeal which they often endure so bravely as to call forth the wondering admiration of their sympathising friends and medical advisers. But such hysterical marriages can sometimes result in catastrophes of the worst kind. I only need recall the well-known case of Dr. P.'s wife, whose attempted murder of her husband (pre-arranged in an hysterically stupid manner) about 10 years ago, created an unparalleled sensation all over Berlin.¹ The poisoning of husband and children by hysterical women is by no means rare. Among other cases, I acted as medical expert in one, where an hysterical mother belonging to the better classes, in a moment of impulsive excitement, killed first her ten-year-old son with cocaine, and afterwards attempted unsuccessfully to take her own life by means of the same poison. That hysterical women are on the whole bad mothers, and that they do not know how to bring up their children, that they are in consequence of the changeableness and capriciousness of their nature capable of spoiling them by the stupidest over-kindness, or of ill-treating them most cruelly, is such a well-known fact that there is no need for dwelling upon it here. That the children of hysterical mothers should, in view of the hereditariness of the neuropathic predisposition and in view of the conditions among which they grow up, and of the consequently wrong education, frequently be subject to hysteria or other neuroses and neuropsychoses, is only what can reasonably be expected.

But for all that, it must finally be emphasized that we must

¹In another similarly unhappy hysterical marriage-tragedy which occurred in Berlin society circles, the recently announced suicide of Mrs. H. after a separation pronounced a long time ago, formed the sad conclusion of the drama.

not go too far with our well-meant prophylactic endeavours, but impose upon ourselves voluntarily a certain reserve, as matters often enough take a different course to that which we anticipated. It cannot be denied that there have been marriages of hysterical persons which have turned out favourable against all expectation, and which have proved to the medical warner an agreeable disappointment. The provoking cause of severe hysterical manifestations was in these cases, according to my experience, as a rule some sad family trouble, from which the persons concerned were in time extricated by marriage and placed under material circumstances favourable to their development.

4. *Epilepsy.*

Nature and causes.—In the third of the great neuroses and neuro-psychoses, epilepsy, we find ourselves upon more confined and separate ground and upon a scientifically more assured basis than in the two preceding ones. Although the pathogenetic theories and the experimental-pathological results closely associated with them, are still widely divergent—and although the controversy is still great on separate points in the clinical picture—there can nevertheless be hardly any difference of opinion on the fundamental view, according to which epilepsy is a highly chronic functional disease of the central nervous system resting upon a peculiar (epileptic) alteration in the whole brain, and which manifests itself especially by conditions of an abnormally increased irritability of the central apparatus of the cerebrum. There occur here in consequence of the accumulation and summation of the excitations acting upon these centres, provoking processes, in the form of brusque periodical unloadings which represent, as “epileptic attacks,” the principal phenomena of the clinical picture or the pathological manifestations of the disease. We distinguish among them most variably pronounced single forms, that of the typical (classical) epileptic attack in the narrower sense (*grand mal*), that of the milder attacks of epileptic vertigo (“absences,” *petit mal*), that of the atypical attacks and of the so-called epileptoid

conditions, in which class we include especially the semi-unconscious state, the post-epileptic insanity and the psychical-epileptic equivalents. It is therefore not correct to simply identify cortical convulsions with epilepsy, as it is yet often done. Although the cerebral cortex must certainly be regarded as the starting-point of the irritations, which provoke the epileptic attacks, it is, nevertheless, by no means the only point of origin of the—to a great extent infra-cortically occurring—manifestations, especially of the convulsions, and we have therefore and also for other reasons, to differentiate the so-called cortical (or Jacksonian) epilepsy as a symptom of very different cortical brain-affections, from genuine epilepsy, just as sharply as the vague phenomena of "epileptiform" conditions which were formerly also often confounded with it and which are observed in the course of various organic diseases of the brain (tumour, sclerosis, cerebral syphilis, paralytic dementia, etc.) or in consequence of chronic intoxications or auto-intoxications (alcoholism, plumbism, uræmia, etc.).

After excluding all these conditions of "symptomatic" epilepsy we arrive therefore at its limitation to the narrower clinical picture, to a chronic disease of the central nervous system which is characterized by the attacks and partly also by symptoms occurring in the intervals, and in which the most decisive factor appears from the etiological side to be its close relationship to the original constitutional neurophatic and psychopathic predisposition, with the nature of which, though, we are not at all familiar. If there are, in addition, in any given case, numerous other individual and accidental elements co-operating immediately in producing the epileptic change altogether or the single attacks, that predisposing neuro-psychopathic tendency is just the point which principally deserves the attention of the physician when considering the relationship between epilepsy and marriage, because the fact must be reckoned with on principle, that epilepsy is by no means a transient occasional affection, but a neuro-psychical constitutional anomaly which rests upon a congenital, often inherited degenerative inclination, which lasts as a rule through the whole life of the individual and is in this sense an "incurable" disease.

Influence of epilepsy on marriage.—There is hardly another disease of the nervous system, no matter how serious, which is so inimical, so obstructive and so calamitously destructive in respect to the physical and as a rule also the psychical relations between husband and wife, and consequently to the married state altogether, as epilepsy. The peculiar dread with which the lay public regards this disease particularly, and which found its expression in ancient times already in the supposition of a demoniac origin, and in the designation of the affliction as "*morbus sacer*," constitutes amid the tenderest and most intimate of all vital relations a source of unconquerable, though ever so unjust, antipathy against the sufferer which is capable of dissolving and completely destroying the union just concluded, sometimes from the very commencement.

Those belonging to an older generation, who have in their school-days or adolescence devoured *Eugène Sue's*, at that time highly famous, "*Mystères de Paris*," will never efface from their recollection the terrible description of that first-night's scene in which the young husband is seized with an epileptic attack, and the solitary existence which the newly-wedded wife was henceforth doomed to lead. The narrative is hardly overdrawn. I know quite a number of cases—though mostly of an opposite kind, that is, where the wife and not the husband was the party affected—in which the accumulated and repressed sexual excitement of the pre-nuptial period discharged itself either on the wedding-day or during the wedding-night, or even during the subsequent days while on the honeymoon-trip, in the form of violent and severe epileptic attacks, which being absolutely unsuspected and unforeseen by the other partner, caused to the latter such an unconquerable fear and shock, that they were necessarily at once followed by an immediate inward, in some cases also by an outward, dissolution of the marriage. Where the outward signs of the matrimonial union were preserved so as to avoid talk and scandal, there was as a rule from that moment no vestige left of an inner and genuine affection; there was even no show of compassion, and the former love gave way to aversion and hatred—often enough of a reciprocal kind, because the one side could not forgive the "deception" practised

upon him or her through the concealment of the dread disease, and the other, misunderstanding the severity of the illness or from a comprehensible selfishness unaware that any blame attached to him or her, would naturally complain more and more bitterly of the indifference and unjust behaviour of his or her partner.

I must, however, observe in this connection that according to my experience, women are generally more indulgent towards their epileptic husbands than is the case the other way about, and that they know better how to adapt themselves to the circumstances demanded by the occasion. As a matter of fact I know of a few very happy marriages where the husbands are epileptic—though they are rare—but on the other hand I cannot remember a single one where the wife is affected with epilepsy. This is on the whole probably due to the circumstance that in women the impulse to help and to relieve which springs from the depth of their motherly sympathy and which finds its greatest opportunity round a sick-bed, and also the strong development of the sense of compassion, enable them to overcome even the repugnance against the terrible manifestations of epilepsy with greater ease than can be done by the generality of men on account of their natural disposition. Besides, a man is far more likely to be deterred from sexual intercourse with a wife suffering from epileptic attacks than vice versâ women with epileptic husbands (perhaps, because the sexual orgasm in man when at its highest point, succeeded, as it is, by a state of exhaustion, has a distant resemblance with an epileptic seizure, which appears therefore to a certain extent as a pathological aggravation of a physiological process, as to whose normal intensity and extensity the sexually ignorant wife possesses no information). Men are, as we must readily admit, harder and more impatient, they endure the evils of ordinary life with greater difficulty and less forbearance, and they find it consequently especially unbearable if unpleasantnesses and injuries, not only of a domestic character, but also of a social nature, and affecting their material position, arise to them because of the epileptic disease of the wife. This is particularly the case where a minute observation of the usual social formulæ is part of the daily routine, for instance among

the higher classes whose intercourse is limited to a certain caste-like exclusiveness, officers, high officials, etc.

The epileptic semi-unconsciousness and the psychical-epileptic equivalents present in this respect the gravest outlook and the greatest dangers. It is well-known that these conditions can also produce directly, owing to the fears, illusions and frenzies associated with them, violent discharges either in the form of attempts at suicide or at murder against the other partner, or in that of other criminal acts. We shall have to deal more minutely with this subject in the chapter on psychoses in relation to marriage. But even where there is no question of such acts of violence, every social intercourse is rendered very unpleasant, or even impossible, partly by the peculiarity of the so-called epileptic character with its irritability, impetuosity and sudden outbursts of violence and rage, its erotic paroxysms which are particularly in women, even more dangerous, and partly by the constantly present dread of the occurrence of convulsive attacks and psychical equivalents.

Only recently I attended an officer's wife who was suffering from epileptic semi-unconsciousness and to whose husband the alternative was necessarily given by the commander of his regiment, either to resign his commission or to separate from his wife, because the latter had not only in consequence of her peculiar character seriously insulted several ladies of the circle, but had also at a party given at her residence aroused the greatest indignation of those present by her unmentionable conduct. In another case referring to the wife of a civil engineer the patient had in her semi-unconscious state several times spent the whole night away from home wandering about and also giving way in a most unrestrained manner to her erotic impulses: divorce became here absolutely unavoidable.

As a counter-part I wish to mention the marriage of a medical man—since deceased—which passed off without any trouble, although he suffered from rare—but on this account more violent—attacks of epileptic semi-unconsciousness, during which he used to fall into such a rage as to take hold of an axe or a knife and threaten everybody, so that the non-occurrence of calamitous catastrophes may be regarded almost as a miracle.

All this was carefully concealed, and the sufferer himself was kept in total ignorance. Woman's love exhibits under such circumstances far greater strength and resistance than that of the man.

Influence of pregnancy and childbirth.—If we have therefore to recognise that epilepsy of either the husband or the wife is capable of causing most serious and severe disturbances to the inner as well as the outer preservation of the conjugal unity, we must not by any means underrate the enormity of the dangers which, as we know from experience, arise in a physical respect in connection with the natural results of marriage, pregnancy and parturition, in epileptic women, or with the constitution of eventual descendants of epileptic fathers and mothers.

Whereas it was formerly believed by many optimists that the processes of pregnancy and parturition have a rather favourable influence upon an existing epilepsy in women, or that they do not at all events cause an aggravation of the epileptic manifestations, this view has recently come to be regarded with some doubt, and, indeed, it can hardly be upheld, at least in this general form. Not only do the ordinary attacks become more frequent during pregnancy, but often severe symptoms, absent at other times, are also observed, especially some which belong to epileptic insanity, various pathological conditions of the consciousness with deficient memory, delirium, complete bewilderment, etc. It is further to be remembered that attacks have several times been reported as having come on shortly before or during the labour-act, after the rupture of the membranes and in the first few days after the confinement. Finally, it seems from communications published that there are isolated cases in which epileptic attacks occur during pregnancy only, or only during the puerperal state following it (*Fellner*); but then again, pregnancy may cause in epilepsies, with principally a menstrual type of the attacks, a diminution or even a temporary cessation of the latter. At all events the dangerousness of an existing epilepsy to the course of pregnancy results also from the circumstance that in association with frequent attacks miscarriage, premature labour and death of the child have been

observed. In some cases, indeed, though only very rarely, the interruption of the pregnancy or the induction of artificial premature labour might even appear medically indicated.¹

The offspring of epileptics.—Of still greater significance are the injurious effects of epilepsy in the generators (and in the ancestors generally) upon their offspring, a subject which constitutes in itself an important chapter in the doctrine of "deterioration," or of psycho-physical degeneration. There can be here on the one hand a direct inheritance of the epilepsy itself, and on the other a transference of the neuro-psychopathic predisposition. The latter forms then the starting-point or, as our bacteriological contemporaries prefer to call it, the nourishing soil for the development of more or less severe neuroses or psychoses, which manifest themselves in multitudinous ways. As regards the direct conveyance of epilepsy from parents to children, this is according to the statistical results which we possess, of rather less frequent occurrence. *Leuret* found among 106 epileptics direct heredity in 11 cases, and other authors, including myself, have also arrived with regard to the direct transmission from ascendants to a percentage not materially greater. It is, by-the-by, doubtful whether the influence of epileptic mothers or that of epileptic fathers prevails in this sense in the offspring (according to *Reynolds* the influence of the father predominates, according to *Esquirol* that of the mother). A far greater percentage, however, is the result if all sorts of convulsions in descendants of epileptics are taken into account as many of these children die at an early age when real epilepsy has not yet developed or been ascertained, but who have suffered from infantile convulsions. According to *Féré* more than half of all the children springing from epileptic parents are subject to convulsions; according to *Bouchet* and *Cazeauvieuille*, 37 from among 58 children of epileptic mothers died very young, and nearly all of them amid convulsions, while of the 21 who survived, 7 more were suffering from convulsions.—The frequent transmission in the form of a "predisposition," of a neuro-psychi-

¹According to *Larger* (*l'hérédité en obstétrique, comptes rendus de la Société de biologie*, Vol. 53, No. 39), abnormalities in the pregnancy and in the puerperium occur as a sign of heredity in the descendants of epileptics.

cal constitutional debility, becomes evident from the circumstance that among the children of epileptics the most various neuroses and psychoses appear uncommonly often. Moreover, epilepsy is not by any means rarely associated with other neuroses and neuro-psychoses, with neurasthenia and hysteria, hemicrania, exophthalmic goitre, diabetes (insipidus and mellitus) with other convulsive manifestations (catalepsy, chorea), and with pronounced degenerative forms of insanity, severe hypochondria, *folie circulaire*, etc., etc.

Attitude of the medical man with regard to the marriage of epileptics.—There arises from all this the exceedingly grave question: What should be our attitude when consulted with respect to marriage by epileptic individuals or when approached in any given case by an epileptic for the medical consent to a contemplated matrimonial alliance?

One would, perhaps, imagine that this question cannot possibly arrive at all, and that there can hardly be any difference of opinion on the point that it is the duty of a medical man to do all that lies in his power to prevent the marriage of those who are known to suffer from epilepsy. But the matter is by no means so simple as that. Not only is an individual consideration of each single case an obviously necessary indication, but there are not a few laymen and even doctors now and then who incline on principle to the remarkable view, that the marriage of epileptics influences their disease favourably and that it can even achieve its cure! I have not been able to find out how this belief, or rather superstition, has originally arisen; what is absolutely certain is that it is utterly wrong and perverse and that it deserves the most decisive opposition and annihilation. I have witnessed some sad examples, among others the case of a young man who was sent to South Africa on account of his severe epilepsy, where he improved first in a very satisfactory manner. At the recommendation of an English physician, however, he married in order to achieve a perfect cure, and moreover, a Russian lady who was rather of delicate health. The result was that his condition became terribly worse, he was seized on an average by as many as 5 to 9 fits daily and nightly—sometimes even by 10 to

13—he developed a stammering speech, loss of memory, progressive stupor amounting to complete mental decay, signs of paralysis and general marasmus. In this wretched state the patient who was 27 years of age, returned to Europe, and every other method of treatment having been unsuccessful, a cortical incision was at my instigation performed, after which a lasting improvement took place.

There can be no possible doubt that sexual excitement such as is produced by coitus and all the other stages of the marriage process, is, at all events in view of the condition of morbidly increased irritability of the central cerebral apparatus, which we assume to be one of the principal constituent parts of the "epileptic alteration," bound to exercise a most injurious effect, directly furthering the occurrence of attacks, if only because it combines with the ordinary excitements of daily life thus adding materially to their influence. Were we to draw from this circumstance, as well as from the apprehended injuries to the descendants, the necessary conclusions, we should, of course, arrive at the result that not only must the contraction of marriages by epileptics be opposed by all possible means (among which we might, perhaps, have to agitate also for legal prohibitions based on social-hygienic considerations), but that epileptics must as far as possible be rendered asexual, or transformed into anerotic or anti-erotic creatures. But in point of fact, we must strictly differentiate here between the duties and objects of the social-hygienic prophylaxis and those of the individual-hygienic prophylaxis. With regard to the former, hardly anything has as yet been accomplished or seriously attempted in respect to marriage and the offspring from the standpoint of this branch of disease like from that of any other (I need only mention tuberculosis and syphilis): for there is apparently great hesitation in interfering preventively and defensively with the individual right of choosing for oneself in just this most intimate of all spheres of action. We seem to forget that we are already accustomed to many a legal act of interference with our personal liberty in the interest of the public welfare, as witness the modern legislation directed against the spread of epidemics, the partly compulsory isolation of sufferers from infectious diseases,

the homes for leprous individuals, etc. But not even the legislative body of the State of Michigan has hitherto ventured to put into practice the natural consequences of a broad-minded statesman-like view of the entire situation; in an addendum to the marriage-laws of that American State which was recently decided upon, the marriage of insane persons, idiots, and of individuals suffering yet from syphilis and gonorrhœa in an active stage, has been made a punishable offence and threatened with serious penalties, but no provision whatever has been made with regard to epileptics as such. Professor *Senator* has already in the Introduction to this work made some observations of a general character on the possibility of such legal protective and preventive measures, and with these one cannot help agreeing thoroughly from the point of view of the special domain discussed here.

Individual prophylaxis and treatment.—As regards individual prophylaxis, it must be admitted that not even by the most radical interdicts of marriage, not by the most impossible and most unreasonable prohibitions of all sexual intercourse by and with epileptics, could we hope to achieve our purpose; for the masturbatory gratification to which the individuals thus "disinherited" would undoubtedly have recourse, is on account of the cerebral over-irritation of epileptics (male and female) inseparably associated with it, far more dangerous than intersexual intercourse kept within reasonable limits can be under ordinary circumstances. It can often therefore only be a question here, as in so many other difficult problems, of having to choose the lesser and more bearable of two obvious evils. As far as at all possible, our object will naturally be, by hygienic recommendations and prohibitions, by a painfully accurate regulation of the mode of life and general conduct of young epileptics, to try and prevent the rise of sexual emotions and irritations or at all events to delay it and to keep it within bounds, an endeavour in which we are, by-the-by, very much helped by the bromide treatment that is generally extended over several years. More important even than the medicinal is for the realisation of this object the dietetic-hygienic treatment, which includes numerous physical protective and hardening measures

—above all a rigorous exercise of absolute abstinence from alcohol and other injurious articles of diet. The greatest weight attaches to the pedagogic-psychical treatment which in those cases where the parental influence is insufficient or absent, ought to be permanently undertaken by doctor and tutor—combined preferably in the same person. Unfortunately circumstances rarely permit this to be done. But that a great deal can be accomplished in this way, that epileptics can be transformed into proper human beings and rescued from their passionate moods and dangerous sexual impulses, that they can be taught self-discipline, of this we have several instances where surprising and impressingly convincing results were obtained under uniformly favourable conditions.

Finally we must not altogether forget that it is possible for epilepsy to become cured, rare though genuine and permanent cures are. It is naturally very difficult to prepare statistical tables of cured epilepsies, since this would require, if the results are to be reliable at all, a control and observation of all the single cases extending over decades. But that real permanent cures do occur under anything like favourable circumstances and in consequence of a systematic and well-calculated treatment, suitable to each individual case, is an absolute fact demonstrated by experience and free from every possible doubt. I know from my own practice among the better classes a fairly large number of cases respecting which I can state with the greatest possible certainty that they have been perfectly free from attacks for about 10 or 20 years, and where no justifiable apprehensions are excited by the most critical observation from the point of view of the character and mode of life, of the vocation and family interests. As to the offspring, the question naturally remains open yet whether we may regard the children of epileptics, whom we consider as cured before their marriage, sufficiently protected against the disease direct, or against the neuro-psychopathic predisposition. This is a point which is partly connected with the still undecided problem of the hereditary transmission of acquired peculiarities. We are therefore hardly justified in going so far with our nosological pessimism as to oppose absolutely the marriage of every individual who has at some period

of his or her life suffered from epilepsy and who comes to us for an expression of opinion.

But we must, nevertheless, proceed with great caution in every single case, and refuse our consent most decidedly where there do not appear to be any satisfactory guarantees of a complete cure and of a prosperous union from the somatic as well as the psychical side. That our advice, if it is of a negative character, will in the preponderating majority of cases not be followed, is unfortunately something which we may reasonably anticipate and which the experience of every-day life confirms in an unpleasant manner.

Eclampsia. — The subject of eclampsia which, though it is in its manifestations to a certain extent allied to epilepsy, is, nevertheless, purely a disease of pregnancy and primarily not of a nervous nature, but dependent on affections of internal organs and of the metabolism, has already been discussed in a previous article of this work. (See: "Diseases of the kidneys in relation to marriage.")

5. *Chorea (gravidarum).*

Chorea in pregnancy.—With the ordinary mild forms of "chorea minor" we have the less occasion to deal in these pages, as they generally constitute a disease of the infantile-youthful period of life, lying before the completed development of puberty, that is prior to about the 17th year. Neither would the occasionally occurring chorea of adults require any consideration in connection with our subject if it were not necessary briefly to discuss clinically and therapeutically the comparatively frequent incidence of chorea during pregnancy and the frequently severe and peculiar course of this "chorea gravidarum."

This pregnancy-neurosis described first by *Riedlin* (1696) and afterwards by *Unger* and *J. Frank*, does not as a rule occur before the 3d or 4th month, then more frequently in the 7th and 8th months of the pregnancy, and develops either gradually as in ordinary chorea, or in a fairly violent manner amid symptoms of

fever and immediate severe choreic manifestations. In the first case the chorea symptoms disappear as a rule before the confinement or shortly afterwards, and they present therefore (apart from the etiological connection of pregnancy) nothing very specific; it is rather the more acutely occurring cases which take an unfavourable and often a fatal course—under almost uninterrupted convulsions which grow more and more in violence (and which seem to approach sometimes more the character of eclamptic fits) and are accompanied by constant excitement, sleeplessness, delirium, mania-attacks, etc., death ensues either from exhaustion during coma or from asphyxia through the increasing respiratory and œsophageal troubles. It is, however, possible even for such cases to take a turn for the better if the delivery takes place in good time or prematurely (either spontaneously or with artificial assistance). Chorea attacks for the first time most frequently primiparæ, and more rarely for the first time multiparæ, but in the latter relapses occur not infrequently. It is probably influenced in its origin apart from the neuro-psychopathic predisposition underlying all forms of chorea, by special auto-intoxications peculiar to pregnancy as such, and also possibly by abnormal reflexes proceeding from the pregnant uterus about the production of which, however, we know nothing positive.

As regards the special dangers to mother and child associated with chorea gravidarum, they are by no means insignificant. The mortality of chorea generally which is estimated at only 6% jumps up in chorea gravidarum according to *Schrock* to 22%, according to *Burt* to 27.4%, and according to *Tarnier* to as much as 30% (*Fellner*). The dangers to the labour process itself are seen from *Schrock's* statistics dealing with 154 cases: out of these 154 women, delivery occurred at the proper time in 95; of these, 41 were cured—24 during and 21 after the labour—while 8 women died during labour. Spontaneous miscarriage occurred in 19 cases of which

9 ended fatally; spontaneous abortion¹ in 11 cases of which 2 ended fatally; artificial premature labour was instituted in 9 cases of which 3 died; artificial abortion also in 9 cases of which 1 died; 11 patients died before delivery. Labour *per se* seems to occasion a greater danger on account of the irritation produced by the labour-pains, artificial abortion offers therefore a better prognosis than artificial premature labour. In moderately serious cases, according to *Fellner*, the pregnancy should be interrupted during its first half; in severe cases there is no reason for operative interference during the last two months, since, as already stated, labour *per se* cannot be regarded as a curative factor and the risk to life is probably in the 8th month just as great as in the 10th. Only in desperate cases where the woman is quite emaciated, nutrition impaired, and possibly symptoms of mania present, the interruption of the pregnancy in these latter months may at all events form a subject for consideration, as the interference can under the circumstances no longer do any harm; but may, perhaps, do some good.

6. Tetany.

Tetany during pregnancy and lactation.—

We describe, notoriously, as "tetany" a spastic neurosis which is characterised by bilateral tonic spasms occurring paroxysmally and without loss of consciousness in certain groups of muscles (flexors) and by an extreme over-irritability of the peripheral motor nerves to electric and mechanical stimuli.

There would be no necessity to devote any space here to this usually incurable form of spasm which is eminently peculiar to children and adolescents, if pregnancy did not, like in chorea, act in a number of cases as a promoting and predisposing, per-

¹Translator's note: German writers often distinguish between abortion (*abortus*) and miscarriage (*Fehlgeburt*) using the former term for miscarriages occurring during the first 2 or 3 months of the pregnancy before the placenta is formed.

haps, also as a directly causative factor, and if it did not seem that the functions associated with the sexual life, especially lactation, exercise a remarkable influence upon the origin of tetany. In which way this influence acts, whether by reflex irritation of certain nerve-centres (situated in the grey matter of the spinal cord and of the medulla oblongata) or, which is at least very probable, through auto-intoxicating agencies immediately connected with the above-mentioned and other conditions, we are for the present unable to say with certainty. There is a certain amount of confirmation of the auto-intoxicating theory in the circumstance that preceding extirpations of goîtres seem to favour the supervention of tetany during pregnancy and the puerperium, a process somewhat analogous, apparently, to those which take place in bronchocelic diseases, especially in myxœdema, and which suggests an intoxication through the disappearance of the destructive influence exercised by the goitre on certain pregnancy-toxins. At any rate, the individual predisposition plays here, like in chorea gravidarum, a prominent part, as we see in some cases tetany recur with every subsequent pregnancy. On the other hand, it is not quite possible to exclude with certainty the influence of endemic and epidemic factors—that is, of infectious and toxic agencies which come into play preferably at certain times and in certain places, but as to the nature of which we are as yet perfectly in the dark.

On the course of pregnancy tetany has apparently a less serious effect than chorea; according to observations hitherto recorded it seems that the disease appears as a rule after the completion of labour, and that it passes into the puerperal period in exceptional cases only. So far tetany has not rendered it necessary to interrupt the pregnancy prematurely, but it seems that the death of the child has frequently been observed here in the course of the pregnancy, like in eclampsia.—At all events there would appear to be every justification for prohibiting lactation on the part of women suffering from tetany.

7. *Exophthalmic Goître.***Nature and pathogenesis of the disease.—**

The importance of exophthalmic goître from the standpoint of the branch of medicine with which we are concerned here, lies on the one hand in the circumstance that we have in this affection to deal with a generally severe neurosis (and neuro-psychosis) which rests probably upon an auto-intoxicatory basis, and on the other, in the fact that this neurosis appears pre-eminently in the female sex, that it is frequently associated with disturbances in the female generative sphere and especially with menstruation-troubles, and that, like in the two diseases last treated, the processes of pregnancy as well as those of the puerperium and lactation, act here also etiologically as furthering and, perhaps, immediately causative factors in a by no means small number of cases.

It is well known that various theories have been suggested on the pathogenesis of this extraordinary disease, each of which has remained the predominating one for a certain period of time, only to be discarded in favour of some other, but without losing its adherents all at once, a thing which happens as a rule in dethronements of every kind. There is no doubt that for a number of years the thyreogenic theory advocated by *Morbius* in the form of an intoxication or rather auto-intoxication, has been the favourite one, and it must be admitted that it is more than any other in agreement with the clinical facts, although it also presents its difficulties and leaves certain important points of detail so far unanswered. We know that this hypothesis proceeds from the standpoint that exophthalmic goître is an intoxication connected with disease of the thyroid gland—the result of which disease is supposed to be either the formation on the part of the affected gland of a strongly poisonous substance which is introduced into the circulation by way of internal secretion, or the prevention of the detoxication of the organism which the thyroid secretion accomplishes under normal circumstances. It cannot be here merely a question of “hyperthyreoidismus” as it was originally believed, in contradistinction to the hypothy-

reoidismus which is to be assumed in myxœdema and in cachexia strumipriva, but, as I attempted to prove already ten years ago, of a morbidly altered function of the thyroid gland with respect to the constitution of the secretion and probably also with respect to a change in the method of distribution of this abnormally constituted secretion—in other words of a “parathy-reoidismus.”

For all that, we are still very far removed from a satisfactory explanation of the most important single symptoms which characterise the typical complex of exophthalmic goitre, and particularly of the cardio-vascular manifestations that form the principal central point. For between the frequent bronchoceles with their signs of “goitre-heart” and the far more peculiar and extensive clinical picture of Graves’ disease there exist, as *Kraus* especially has shown, no very great analogies¹ and from a therapeutical point of view, too, it is easier to find contradictory than similar conditions between them. Besides, experiments have proved that for the pathogenesis of the altered functions of the thyroid gland as well as for the cardio-vascular symptoms, the supposition of an intermediary action of certain nerve-tracts appears to be indispensable, in which respect the researches of *E. Cyon* have established that the accelerating fibres contained in the sympathetic on the one side and the regulating fibres running in the vagus and in the nervus depressor on the other, come specially into consideration. The “thyreogenic” theory requires therefore presumably in this connection a further neurogenic addition.

Relations between Graves’ disease and the married state.—The relations between Graves’ disease and marriage are considerably more multifarious than in the two affections dealt with last in which there occurs in the main nothing more than a certain unfavourable influence upon pregnancy and the puerperium. With regard to exophthalmic goitre on the other hand, it is important to remember that it is a disease associated in the widest sense with a congenital and often inherited, severe degenerative predisposition (neuro-psycho-

¹*Kraus*, Über das Kropfherz. (Wiener Klin. Woch., 1899 No. 15)

pathic constitutional anomaly), that it attacks preferably the female sex and young people and is accompanied not only by physical weakness but at the same time also by serious nervous-psychical symptoms; that it is amenable to successful treatment to a limited extent only and that it often lasts through the whole life of the individual. It is further necessary to point out that the processes connected with the female sexual life, namely pregnancy, puerperium and lactation, exert in many cases a considerable, as a rule unfavourable, influence upon the origin and development of exophthalmic goitre, inasmuch as the outbreak of the illness is either actually caused by these processes directly, or an already existing affection is aggravated by them—and by pregnancy especially—in an alarming manner. On the other hand it must be admitted that cases are known where immediately after the natural (normal or artificially assisted) conclusion of the pregnancy a remission or even disappearance of the exophthalmic goitre symptoms has been observed. How this influence of pregnancy and of the puerperium makes itself felt, whether through the intermediary of the thyroid gland, which is obviously closely associated with the sexual processes, or through direct auto-intoxicating or reflex actions (from comparison with pregnancy-chorea and pregnancy-tetany) cannot at the present time be answered with certainty. But that such an influence does take place in many cases, may be regarded as empirically established—as may also the fact of a direct transmission of the disease to the offspring, and indeed, in consonance with the described character of the disease, as a rule from the maternal side to female, and rarely to male, descendants. A further fact is also that Graves' disease is frequently combined with other neuroses and neuro-psychoses (hysteria, neurasthenia, hemicrania, epilepsy, etc.) with severe vaso-motor-trophic disturbances and auto-intoxications (myxædema, sclerodermia, Addison's disease, diabetes insipidus and mellitus) and with real functional psychoses (melancholia, mania). That not only insanity and neuroses, but heart disease and constitutional affections, such as tuberculosis, cancer, diabetes, etc., also occur remarkably often in the families of exophthalmic goitre patients, is proved by numerous single observations, as is also the fre-

quent occurrence of several (and many) cases of Graves' disease in one family.¹)

If all these circumstances are taken into account, and finally also the fact that the different symptoms of Graves' disease, the goitre, but especially the exophthalmos where it is very marked, are capable of causing direct physical aversion and thus of frustrating the objects of marriage, it is impossible to resist the conviction that an undoubted case of Graves' disease constitutes on the whole a fairly considerable contra-indication against the contraction of marriage, and that it must at least from a medical point of view be regarded in that light. It stands to reason that here also, like in epilepsy, every single case must be considered objectively for itself, and decided on the one hand according to the degree, severity and duration of the existing disease, and on the other, especially according to the etiological conditions underlying it, the factors of heredity and predisposition, or the more occasional and accidental causes giving rise to the disease, etc., etc. Exophthalmic goitre commencing in the course of married life through the influence of the above-mentioned causes, or the cases which progress and become worse, offer to the medical practitioner great and important opportunities, as where the treatment is judiciously carried out and the outward conditions are not too unfavourable, the chances are in the majority of cases by no means bad, and the therapeutical problem by no means beyond solution.

8. Polyneuritis.

Polyneuritis in pregnancy and in the puerperium.—We are here concerned principally with certain severe forms of polyneuritis, peculiar to the female sex and etiologically connected with pregnancy and the puerperium. It was *Möebius* who described first (in 1887) a few cases of "puerperal" neuritis, mostly localised typically in the region of certain nerves of the arm (median, ulnar); subsequently this

¹See the interesting compilation by *Buschaw* (*Die Basedow'sche Krankheit*, Leipzig and Vienna, 1894, pp. 81-85).

term has received a considerable enlargement inasmuch as diffuse polyneuritic forms with psychical manifestations (*Korsakoff*) and even cases of a general character in the shape of the ascending acute so-called *Landry's* paralysis, for instance the case observed by me¹ were included in this collective designation. On the other hand it was pointed out by myself and afterwards also by others that the beginnings of this "puerperal" neuritis and polyneuritis often probably date as far back as the last stages of the pregnancy, and that the diseases in question ought more correctly to be described as "neuritis of pregnancy." There is besides in some of these cases a temporal and, perhaps, also a causal connection ascertainable with a previous hyperemesis gravidarum—a morbid phenomenon whose immediate origin is, in spite of all the careful researches recently instituted on the subject, still insufficiently cleared up, but in connection with which the supposition of a toxic, or rather auto-toxic, causation—similar to that in eclampsia and in the other pregnancy-diseases discussed above—gradually seems to be gaining a considerable foundation. The thoroughness with which this view is advocated in the monograph of *Dirmoser*² deserves to be specially mentioned. The opinion that we have here to deal with an auto-intoxication emanating from the gastro-intestinal tract and brought about, perhaps, specially by certain intestinal toxins, is in the main identical with the views which I expressed (*loc. cit.*) some time ago on the pathogenesis of the neuritis of pregnancy and the puerperium, and to which I still think I may adhere. On the other hand I cannot ignore that in the etiology of hyperemesis there exists probably along with the provocative autotoxic injuries as a rule also a preliminary constitutional neuropathic (hysterical) predisposition, and that the reflex action (from the sensory endings of the sympathetic in the internal organs) accused by others as the principal factor, co-operates, perhaps, also as a causative excitation. The fact of the matter is, that like in Graves' disease, the position is not

¹*Eulenburg*, Ueber puerperale Neuritis und Polyneuritis. (*Deutsche Med. Woch.*, 1895. Nos. 8 and 9.)

²*Dirmoser*, Der Vomitus Gravidarum perniciosus. Vienna, Braunmüller, 1901.

such that the mere alternative: "Auto-intoxication—or neurosis!" suffices; the probability is rather in both cases the assumption of a neurosis resting on a primary toxic (auto-toxic) basis.

With regard to the neuritis of pregnancy and of the puerperium it is moreover not necessary that the auto-intoxicating poisonous substances should always emanate from the gastrointestinal tract; in some cases the toxins may, like in eclampsia, be of a renal (nephritic) origin or produced in the internal generative organs. That they are bound to vary very much in quality and quantity is evident from the highly unequal intensity and extent of these forms of neuritis which fluctuate between the mildest that are cured as a rule within a short time and most severe ones that are prognostically very unfavourable and frequently end in death. In cases of the latter sort the clinical picture can, if it develops during the pregnancy, assume such a serious aspect that the artificial interruption of the pregnancy may require to be taken into consideration. The milder and more serious forms of puerperal neuritis must, of course, diagnostically and prognostically be distinguished from the obstetric and puerperal forms of paralysis arising from local causes, which affect chiefly the region of the sciatic nerve and are due either to mechanical injuries (pressure of the head before and during the labour; compression by forceps) or to infectious-septic attacks (pelvic thrombosis and phlebitis). These cases have frequently, and especially by English writers (*Mills*) been confused with puerperal neuritis.

9. Diseases of the Spinal Cord.

Tabes dorsalis: influence on the generative functions.—Of the chronic diseases of the spinal cord we have to consider somewhat minutely from the standpoint of our present subject the most frequent and important, and to a certain extent typical sclerosis of the posterior columns (grey degeneration of the posterior columns) which is known under the name of "tabes dorsalis."

It is known that tabes consists as a rule of a progressive and severe disease which attacks principally the posterior columns that serve as sensory conductors, or in other words the radiating regions of the posterior spinal roots, and which can, moreover, begin also in the peripheral divisions of these fibres (as a peripheral or "neuro-tabes") or even remain under certain circumstances confined to these divisions permanently or for a time. The clinical cardinal symptom of the disease, the locomotor ataxy, must be regarded as a "sensory" one in so far as it is caused directly by a disappearance or by a tardiness or difficult action of the regulating and centripetally conveyed excitations which are subject to co-ordination. It is these disturbances in the centripetal paths which also exert their influence upon the sexual life, because they bring about as a rule a constantly progressing diminution in the reflex impulses effected from spinal (or sympathetic) reflex-centres upon the genital excitation, especially in man. The interference with the virility, or the impotence in tabetics depends therefore mainly on hypo-reflexes or a-reflexes, similar to the equally diminished or extinct vesical and rectal reflexes, and—at least it was formerly thought so—upon a certain local connection with the latter, inasmuch as the genital reflex centres have by experiments on animals been located in the lowest portion of the spinal cord close to the vesico-spinal and ano-spinal centres. The more recent, extensive and exact researches of *L. Müller* which have been confirmed by clinical observations, have, however, shown that neither the centres for defæcation and micturition nor the reflex centres for erection and the intra-urethral discharge of the semen are situated in the lowest division of the spinal cord, but that these centres must rather be looked for in the sympathetic ganglia of the small pelvis (ganglion mesentericum inferius and plexus hypogastricus), only the ejaculation of the semen being immediately governed by a centre lying in the spinal cord, that is, in the *conus medullaris*.

But the opinion with regard to the disturbances in the virile power that accompany tabes and other diseases of the spinal cord does not alter materially in consequence of this modification in our topographical views as to the situation of the genital

reflex centres. The centripetal paths which elicit these reflexes run partly at least along the nervus dorsalis penis (terminal branch of the nervus pudendus communis) to the conus medullaris, and from here through communicating branches to the ganglia on the pelvic floor and further upwards along the three uppermost posterior sacral roots to the spinal cord. The disturbance in the virility of tabetic patients, like a considerable part of what is usually called "spinal impotence," must therefore be attributed to an obstruction or abolition of the centripetal conduction along these paths, and especially along the fibres of the three upper posterior sacral roots. The forms of impotence resulting in this manner may, according to the method of distinction suggested by me¹ be subdivided into peripheral sensory impotence (through functional disturbance in the uro-genital centripetal paths which form the means of communication with the sympathetic reflex ganglia) and spinal sensory conduction-impotence (through functional disturbance in the spinal portion of the ascending genital tracts). In both of these forms peripheral irritations of sufficient intensity are no longer carried either to the sympathetic or the intra-medullar genital reflex ganglia, capable of eliciting the normal mechanism of erection and ejaculation. The effect is generally in the first place a rarer occurrence, as well as diminished intensity and duration, of the erections, so that the process of irritation is delayed, or altogether arrested also in the remaining ganglia which are successively called into action, and a sufficient degree of orgasm for the purpose of copulation no longer takes place.

Tabes and marriage.—In this way all kinds of disturbances in the virile power may arise, from the slightest diminution up to complete and permanent impotence. The libido may at the same time become more or less reduced or remain unimpaired. As a rule it is less or absent, which is probably to a great extent due to the unfavourable influence of the disease of the spinal cord upon the psychical condition of the patient. In order to understand the effect which the disease exercises with regard to marriage and the married state, a great deal depends,

¹Sexuale Neurasthenie in "Deutsche Klinik" Fascic. 49-51. pp. 179 ff.

of course, upon whether the *tabes* has developed in the course of the married life and at what age, or whether the husband was already suffering from *tabes* at the time of the marriage and he entered the matrimonial state in full knowledge of this fact. The latter alternative may hardly seem credible, but I know quite a number of such marriages including not a few which turned out perfectly happy. This depends of course to a very great extent upon the temperament, inclination and self-denial of the female partner. There are women—and this speaks well for the moral character of the female sex—who devote themselves, not with sad resignation but with a true love and self-sacrifice, to the task of acting as a real helpmate and attendant to a severely-stricken and probably incurably-afflicted husband for the rest of his life, without being anything but a wife in name; charitable nurses and deaconesses of matrimony who find full compensation for their natural maternal and wifely instincts in this voluntary shouldering of a heavy burden. In others, no doubt, the disappointment makes itself felt sooner or later. The matter is still more serious as a rule in those cases where the diseased process begins to develop gradually after a longer or shorter duration of the married state. It is further to be remembered that *tabes* has in the great majority of cases been preceded by a syphilitic infection—though I am far from looking upon syphilis as the only cause of *tabes* or on the latter as a sort of “meta-syphilis”—; that the infection occurred as a rule some time before the contraction of the marriage, and that *tabes* may take from the time of the infection either 2 or 3 years to develop, or from 15 to 20, which means that it may manifest itself at very different periods of the married life. We also know that *tabes* begins most frequently in the so-called prime of a man's life, between the ages of 30 and 50. All these circumstances play in each individual case a considerable part, along with the other personal circumstances, such as the inclination and character of the married partners, etc. Under such conditions, too, there are women of the kind described above who resign themselves cheerfully, even after a short married happiness, to their severe ordeal, and the devotion of these wives deserves the more recognition as under similar circumstances the

other way about, when the wife happens to be incurably afflicted, the husband exhibits as a rule far less patience and resignation. But there is no lack of women who look down upon their unfortunate husbands with contempt or even hatred and who do not even try to conceal these feelings but show them openly and without any disguise. Between these two extremes we have the large army of those dull and indifferent creatures who have had enough of wifehood and motherhood and in whose case familiarity with the trouble or superficial compassion makes the continuation of the relationship at any rate at least endurable. Others again realise only with great difficulty and gradually or not at all the seriousness of the disease.¹

Tabes in the female sex.—As regards tabes in women, it has already been mentioned that the disease is altogether relatively rare in the female sex; to every 10 men there is at most one woman who suffers from genuine tabes. Where married women are attacked, it is, perhaps, partly in consequence of syphilitic infection from the husband, it happens therefore—and I have seen several such cases—that husband and wife both suffer from tabes, where the wife took ill much later than the husband; in one case this occurred after his death. The special consequences of tabes as regards the wife show themselves on the one hand in sterility which need not necessarily be caused by the impotence of the husband exclusively, but may also be due to the diminished action of the spinal reflex centres in the wife, which seem to possess some importance in the production of the sexual excitement, the orgasm, during coitus, and therefore indirectly also in regard to impregnation. Whether this action consists of a change in the uterine secretion which favours the entrance of the spermatozoa into the uterus, or, which is more probable, of a process of erection in the vaginal portion of the uterus, similar to the erection of the penis and

¹In *Gabrielle Reuter's* sentimental novel "Liselotte von Reckling" the self-sacrificing heroine gives her hand to a young man who is chained to his sick-bed by an incurable paralysis of the spinal cord. But when the poor patient, seized by a strong sensual emotion, attempts to embrace her eagerly, she experiences such an aversion that she runs away as if deprived of her senses, and forthwith breaks off the engagement.

working in the same sense, cannot at the present time be decided with certainty. Besides, in estimating each individual case, it must not be overlooked that a somewhat diminished virility in the husband is alone sufficient to prevent the orgasm of the wife from coming into action properly, and to operate in this sense, too, as an obstacle to conception. Finally, tabes and other diseases of the spinal cord in women can have an important influence also upon the course of pregnancy and labour. In a few cases of tabes (*Macdonald*) an extraordinary delay has been observed in the process of delivery, which must probably be attributed to the deficient conduction of centripetal irritations in consequence of the destruction of sensory tracts. This circumstance is also said to have produced in other cases indolence of labour-pains in spite of an otherwise normal labour—not only in tabes, but also in spinal caries, and (according to *Fellner*) in one case of multiple sclerosis.

Tabophobia.—A word or two on "tabophobia," which is becoming almost as frequent, and can cause nearly as much trouble to the patient, sometimes also to the doctor, as real tabes. I have seen it not only in men, in whom it is very common as a special form of neurasthenic hypochondria, but occasionally also in women. Insignificant paræsthesias or pains, but especially a diminution in the libido and a supposed diminution in the virility, lead to the beginnings of a self-diagnosis which is gradually completed by information from friends and others and by reference to encyclopædias and doubtful medical or pseudo-medical works; this is particularly the case if a guilty conscience on account of former masturbation or of a possible syphilitic infection supplies etiological factors, or if the wrongly-executed attempt to obtain the patellar reflex gives a negative result. In such cases it is possible for the above-described "psychical" impotence to declare itself, and through a "vicious circle" on its part to co-operate in apparently confirming the diagnosis. Sometimes one can succeed by an elaborate manipulation and fussy obtainment of the knee-jerk phenomenon, accom-

panied by a few semiological remarks, to convince the patient of the groundlessness of his fears and to restore to him his lost self-confidence. But this satisfactory result is often of short duration only.* In the majority of cases the desired result can only be achieved permanently by a systematic psychical influence on the part of a competent authority, aided by a prolonged observation-period confirming the non-occurrence of the dreaded tabes-symptoms.

Other diseases of the spinal cord.—The effect of other forms of disease of the spinal cord we can dismiss with a few remarks. In men they frequently present a picture of sensory impotence analogous to that of tabes dorsalis—often also the picture of motor-conduction-impotence through functional disturbance in the spinal portion of the descending (centrifugal) genital tracts, or in the reflex arcs themselves. On the other hand, contrary symptoms of morbid sexual irritation may occur in the form of abnormally increased and lasting erections, or so-called "priapism." This, subjectively very painful, but objectively less prominent, phenomenon is observed comparatively often in transverse lesions of the cervical and dorsal spinal cord which are accompanied also by other symptoms of irritation, and more rarely in isolated localised lesions in the lumbosacral portion and in the conus medullaris. This clinical experience seems to support the view (confirmed also by experiments on animals) that the efferent paths going from the brain to the erection-centre, emerge from the spinal cord at a comparatively high level, namely in the upper lumbar region. But apart from this centrifugal innervation coming from the brain, the erection-centre can also receive reflexly an increased irritation from the periphery by way of the above-described centripetal conducting tracts, which gives rise to the production of repeated and morbid erections in patients suffering from disease of the spinal cord. Not infrequently these conditions pass into a state of diminished virility or impotence, and in some of the severer forms priapism is even from the very beginning combined and associated with impotence in quite a peculiar manner.

It is finally necessary to call attention to the imperfect de-

velopment of the genital apparatus and of the genital functions which accompany certain congenital malformations in the spinal cord (meningocele spina bifida occulta) or which may arise in connection with a partial arrest in the development and the growth after diseases of the spinal cord in young children (infantile spinal paralysis). In women the latter cause may facilitate the production of severe pelvic contractions which require as such occasionally the operative interference of the obstetrician (*Fellner*.)

10. Diseases of the brain.

Organic diseases of the brain; their effect on the genital functions.—We have already discussed in detail the great central neuroses, neurasthenia, hysteria, and epilepsy, from the point of view of their relationship to marriage and the married state. The so-called "mental diseases" in a narrower sense, which from their nature loosen as a rule the inner bonds of matrimony so long as they last, and often enough lead to outward separation as well, must be left for discussion to the next chapter.

There remains therefore to say something here on the organic diseases of the brain, which though they manifest frequently a concurrent psychical affection, do not exhibit such an amount of disturbance on the part of the emotions and the mental life as to necessitate their inclusion among the real psychoses.

In this connection we must consider first the influence of organic cerebral diseases on the male genital functions, but we have unfortunately very few undisputed clinical experiences that can assist us in the matter. Generally speaking, it is perfectly clear that the influence of organic disease of the brain can make itself evident in very different ways, by a diminution or abolition of the virility, as well as by morbidly increased erections (priapism), by the disappearance or by a morbid increase of the sexual libido, and by manifold anomalies and perversions of the sexual sensation and sexual desire. Impotence may ensue through a disturbance in the conduction or an interruption in

those tracts which represent the intra-cerebral continuation of the ascending and descending genital conducting paths of the spinal cord, as well as through disease of their cortical centres and of the inner-central communications, and finally through disease in the higher psycho-sexual centres supposed to be situated further than these cortical centres and associatively connected with them, that is, the centres of the imaginative pictures and sexual representations. But as not only irritative but also inhibitory influences arrive from these centres to the spinal and sympathetic genital reflex centres, the absence of these central inhibitions can also be productive of excessive irritations of a morbid nature, morbidly increased and painful erections (priapism) and so forth. In the female sex, analogous conditions can give rise either to sexual anæsthesia (anaphrodisia) or to a complex of symptoms of a morbidly increased sexual irritation (nymphomania). Of interest is in this connection the influence of certain cerebral poisons which, like opium and morphia, act at first often as stimulants, but in the further course weaken and paralyse the sexual desire. In men they also act eventually upon the virility, whereas in other habitual dietetic poisons (alcohol, tobacco) the depressing effect on the sexual power is often from the very beginning highly pronounced.

Unfortunately we possess next to no information on the localization of the genital conducting tracts and centres in the brain, especially also on the situation of the psycho-sexual irritations and inhibitions and on their connections with the cortical centres. It has often been assumed that the cerebellum plays here a prominent part, since the old craniological legend emanating from *Gall* and adopted by the older physiologists believes in some sort of a special association between this organ and the sexual functions. But neither recent experimental researches nor clinical observations have supplied any useful proofs in favour of this contention. Modern physiology knows nothing about a special relationship between the cerebellum and the sexual activity, nor do symptoms relating to the sexual life play any appreciable part in the symptomatology of cerebellar diseases (tumours, hæmorrhages and softening) and in their topographical diagnosis. Of course, they are just as devoid of

importance in the special symptomatology and local diagnosis of other affections of the brain.

What is certain is, that in the diseases of the brain which take the most chronic course (sclerosis, tumours), the virility may remain unimpaired until the final stages of the illness. On the other hand the sensory deteriorations, the changes in the moral life and in the intelligence which often accompany these diseases, naturally make themselves apparent also on the part of the sexual sensation and the sexual impulses in a more or less effective manner. It is obvious that in the depressive-melancholy conditions of sclerosis-patients, in the stupour of those suffering from tumour, in the apathy and indifference of the advanced stages of organic brain-disease, the sexual desires and impulses must disappear or be reduced to a minimum. Vice-versâ, with the growing loss of the sensory controlling influence, the inhibitions exercised under normal circumstances may also vanish; the patients may gratify their desires without shame or consideration for others; they may when they are bedfast exhibit or masturbate at the sight of a woman, and so on, a state of affairs which is fairly often observed not only in paralytics, but also in secondary dementia after focal lesions, for instance, apoplexy.

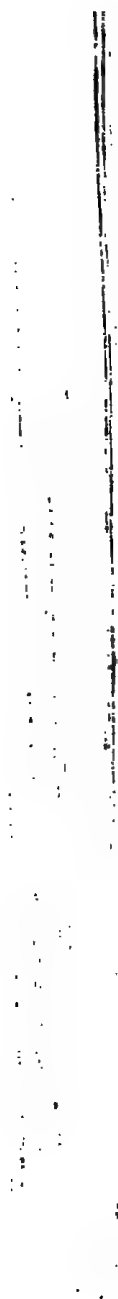
Pregnancy and disease of the brain.—In women a certain influence of the brain on the contractions of the uterus (such as was formerly believed on the strength of experiments on animals to proceed also from the cerebellum) cannot altogether be denied, although nothing positive is known on the point. But apart from that, there is in the combination of pregnancy with severe organic disease of the brain, especially tumours, an undoubted element of danger. In many cases sudden death has been known to occur during labour, the cause of which could not be explained, and which might be looked for, perhaps, in the suddenly altered conditions of the circulation, in the increased blood-pressure and the greater flow of blood towards the brain (*Fellner*). Prophylactically it might therefore become necessary, especially in the case of large tumours with marked symptoms of spacial encroachment, to institute premature labour in the interest of the yet viable child.

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list is as follows:

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XXII

Insanity in Relation to Marriage



INSANITY IN RELATION TO MARRIAGE

By Professor E. Mendel (Berlin)

In a not insignificant number of cases the question is mooted either by the parties about to engage themselves in matrimony or by their parents or guardians whose consent to the projected marriage is sought, whether insanity has ever occurred in the respective families. This is as it should be!

From time immemorial it has always been known that there is hardly another disease which shows such a tendency to reappear in the descendants in the same form as in the ascendants, or in any other, as insanity.

The consideration of the importance of the occurrence of insanity in the ascendants in relation to the danger of its appearance in the descendants, in other words, the consideration of the hereditary predisposition demands a somewhat detailed analysis of the facts which psychiatry has established in this respect.

Hereditary predisposition.—The simplest case of inheritance of a mental disease is that wherein the child of an insane father or mother or of insane parents also becomes insane.

We assume, where there are no other causes demonstrated for the origin of the insanity in the descendants, such as trauma, cerebral syphilis, etc., that the predisposition to the disease is deposited in the germ at the time of conception (conceptional direct heredity).

If under ordinary circumstances crossed heredity occurs as a rule, that is, the daughter resembles the father, and the son the mother, in hereditary insanity the influence of the mother shows itself principally in the daughter and that of the father in the son. The daughter especially who is like her insane

mother with respect to constitution, temperament and character is relatively most subject to be attacked by mental disease. The paternal influence in the transmission of an hereditary predilection is, as *Esquirol* has already pointed out, smaller.

The heredity is called uniform if the same kind of mental disorder appears in the descendants as was or still is present in the ascendants; in this connection it happens occasionally that the uniformity refers to the period of life as well, and that the disease breaks out in several generations at the same age (corresponding heredity).

The heredity is designated as unequal (polymorphous) if the forms vary.

Sometimes the new form arising in the descendants, presents some of the features of that which was present in the ascendants, so that peculiar clinical pictures develop. For instance, a periodical insanity of the mother may produce imbecility in the daughter, of a form which shows otherwise unusual periodical exacerbations.

The hereditary predisposition is called transformed if in the place of insanity a general disease associated with an affection of the nervous system, or some neurosis, appears in the descendants (diabetes, arthritis nodosa, epilepsy, hysteria, hemiplegia, etc.). *Orschansky* has extended this law of transformation further still, and he points out, that the children of fathers suffering from diseases of the chest are often subject to nervous or mental diseases. A sort of general diminished resistibility of the organism is thereby inherited; as to which part of the same gets attacked, that depends on the injuries to which the organism is particularly exposed and which affect the specific organ.

If both parents are insane, or only one of them is insane and the other suffering from a disease of the nervous system which experience shows to have a tendency to heredity, the result is a cumulative inheritance which creates often those severe forms of psychosis (hebephrenia)—that are either congenital or gradually developed during puberty—and which render the subject of marriage altogether out of the question. Occasionally, however, insanity breaks out in the third decade and it then assumes as a rule a progressive character.

With the exception of those cases in which heredity has produced already in the germ such changes that a normal development of the same does not take place and the evolution of the brain especially is impeded, so that the child is born imbecile or an idiot, and apart from the cases in which the development of the mental organs is possible, but only up to a certain point, after which no further progress can be made, this often coinciding with the attainment of puberty,—with the exception of these cases, in which the insanity appears in the descendants in the form of mental decay as such, the hereditary tendency to insanity represents in by far the majority of the cases only a predisposition to mental disease. A further injury must supervene to produce disease in the brain rendered less resistive by the predisposition.

The evil elements which may be found in marriage as such and which develop that predisposition to the disease, will be considered later on. Here we only wish to point out that the fact that not the disease, as such, is inherited but a predisposition to it, explains why in a family in which an hereditary tendency to mental diseases undoubtedly exists, one or even two generations escape being attacked, the insanity appearing again in the next generation. We speak in such cases of an atavistic heredity (*Legrand du Saulle*) or of heredity *per saltum* (*Burrows*).

Though the tendency remained in one or two generations latent, it was nevertheless inheritable. Such a latent predisposition we must also assume in the so-called collateral heredity.

The individual in question, it is true, shows no cases of mental disorder in the direct ascendants, but such cases have occurred in the consanguineous collateral lines, in uncle, aunt or cousin.

But a prominent alienist (*Neumann*) has said that though it is possible to inherit money from an uncle or aunt, he considers it impossible for the inheritance to consist of a mental disease.

Literally this is, indeed, quite true, and the expression "inheritance" is not very appropriate. But if we attach any importance to the answer to the question, whether collateral heredity is present, it is only because the affirmative denotes in a given case the possibility or even probability that insanity existed in

some unknown direct ascendant, the predisposition to which became manifest in one or two lines only, but remained latent in that of the individual in question.

But the hereditary tendency does not remain latent in entire families only; experience teaches—and this is the consoling feature in the dreadfulness which might seize, in virtue of the above remarks, anyone who includes among his ascendants an insane person, perhaps some “crazy” aunt—that only in a certain percentage does the existent predisposition develop into disease proper.

But why the same procreators, one of whom is insane, should beget children, of whom one, or perhaps two, and very rarely three, are attacked by mental disease, while a large number of brothers and sisters remain healthy and, perhaps, endowed with extraordinary mental faculties and great mental resistiveness—this is a question for the answering of which we lack so far every scientific foundation. Neither do we possess any extensive statistics from which we might be able to infer how great the danger (expressed in figures of percentage) of an apprehended insanity is in individuals who spring from an insane family, how great the number of those who are hereditarily predisposed and who have yet remained healthy throughout their lives. The extent of that danger is obviously not shown in the numerous tables which give us the number of insane who are hereditarily predisposed.

There are only a few communications on the point: *Jenny Koller* found among 370 mentally sane individuals 59% hereditarily predisposed. The percentage of those hereditarily predisposed among the insane was 76.8%.

Strohmayer saw 30% of individuals hereditarily predisposed remain healthy in spite of various injuries.

A complete exhaustion of the predisposition may take place without a crossing with healthy blood, or other measure of improvement having been adopted.

Hereditary predisposition of insane individuals.—The statements of authors respecting the hereditary predisposition in the insane are exceedingly contradictory.

Jarvis, Aubanel, Thore found such predisposition in only 4%

of their insane patients; also *Schlager*, who admits hereditary predisposition only where the father or mother of the patient was insane before or during the act of procreation; against these figures, those of *Moreau* show the number of insane patients with hereditary predisposition to be as high as 90%, because he, like *Lélu* and *Burrows*, includes in the predisposition not only the mental diseases which have occurred in the respective families, but also all other possible nervous disorders in the ascendants.

Although scientific experiences on the inheritance of nervous diseases do not justify *Schlager's* view, that of *Moreau* goes decidedly to the other extreme, inasmuch as this author takes into account with regard to hereditary predisposition so many abnormalities in the ascendants, some of them of hardly any significance, that there are finally very few people left in the happy situation of having no "hereditary predisposition."

If the above-mentioned statistical statements offer us therefore no proper survey, because the authors take either too narrow or too wide a view of the term "hereditary predisposition," the tabulations of large public institutions suffer from the defect that, on account of the social position of the greater number of the inmates, it is often impossible to obtain correct anamnestic data. Frequently even the healthy relatives of these inmates are unable to state anything definite when asked about their ascendants or other members of the family.

With regard to simple psychical disorders (melancholia, mania, paranoia, etc.), there results from *Mayer's* collection (reproduced on page 112 of this work) of 47,379 male cases in Prussian lunatic asylums an heredity-percentage of 30.61%; and of 54,718 female cases an heredity-percentage of 32.56%. I have found in the same forms of insanity among the conditions of a private asylum about 60%.

But whether we take the percentage of the hereditarily affected insane to be higher or lower, there can under no circumstances be any doubt that hereditary predisposition plays in the etiology of mental diseases a very considerable part, either as a direct cause of insanity (especially of idiocy) or as a predisposing factor of immense importance.

Hereditarians, degenerates.—But this is not all the danger to which hereditary predisposition subjects the offspring. It happens by no means rarely, that although under its influence a mental disease in the narrower sense does not develop, a peculiar temperament, an odd way of thinking, arises, which differs from that of the average normal man. I have distinguished 3 particularly frequent groups of such hereditarians who present on the whole a large number of varieties.

1. Those who from an early age are dissatisfied first with everything round their own families, and afterwards with the whole world, who look upon everything as a sham, upon life as not worth living and in whose eyes suicide is the only correct thing.

They fulfil the duties assigned to them promptly and very often in a faultless or even excellent manner. Occasionally, however, especially if they are not under proper control, they lose all energy and long pauses occur in their activity. They almost always make hypochondriac complaints which exacerbate from time to time; the dreaded spectre of insanity, the actual occurrence of which among their ascendants is constantly haunting them, plays as a rule the principal part, and fear and anxiety for the future induces many an hereditarian of this sort to put an end to his miserable existence.

2. Those who show an especial and frequently one-sided aptitude culminating very early in mental maturity, but who constantly exhibit at the same time both as to their feelings and ambitions an excessive irritability.

A rash formation of certain plans, an eager wish to carry them into execution, succeeded by just as rapid a relinquishment and laying-aside of what had only just been ardently desired, constitutes a prominent feature. Excessive capriciousness, incalculableness of temperament and impulsiveness of action are accompanying symptoms.

3. Those who distinguish themselves by their behaviour in society, by their extraordinary habits, their

peculiarities, their odd notions and opinions, which they not infrequently advocate and defend most skilfully, while ignoring or acting contrariwise to the views generally adopted. Such individuals are described in popular language as "originals," or "crazy geniuses," or "cranks."

The individuals belonging to these categories have also been called "degenerates." They present not infrequently physical signs of degeneration, malformations of the skull, of the ears, pharynx, teeth, etc.

In some of the hereditarians phobias or hallucinations occur, or both of these together.

They may attain old age without becoming insane, but they are during the whole of their lives constantly on a balancing-rod on which they try, not without a serious effort, to preserve their equilibrium. Special occasions which excite them unduly, particularly such as have a depressing influence, can throw them off their balance; the result is temporary, recurring or permanent insanity.

Here, where the conditions of married life come into special consideration, it is particularly worth mentioning also that in such hereditarily predisposed individuals, impotentia generandi, inverted sexual sensation, anæsthesia sexualis feminarum, etc., are by no means rare complications.

In connection with the facts above described, on the relationship between hereditary predisposition and mental diseases, the question now arises:

Is there any special danger for a person in whose family insanity has occurred, to become insane too? Is this danger so great that marriage ought to be dissuaded from or medically prohibited?

Prohibition of marriage in collateral hereditary predisposition.—We have to consider first the point, what should the doctor's advice be in those cases in which a blood-relation in the collateral line has been or is insane? If we wish to answer the question definitely whether an hereditary predisposition is thereby created, it is necessary to establish in the first place of what kind the insanity of that blood-relation

was or is. Whether it was acquired through syphilis, alcohol or some other poison, thus having nothing to do with an hereditary tendency of any sort; whether it was, perhaps, a senile dementia which arose at a very advanced age in an individual who had formerly always been healthy, and which cannot therefore be brought into association with an hereditary predisposition.

Where all these factors can be excluded, there is still the question left open whether the hereditary tendency in the family has not become exhausted with the insanity of that particular relative.

If we bear in mind further that marriage would become permissible in very exceptional cases only, if it were necessary in each individual case to eliminate every possible hereditary factor, we may say that such isolated occurrences of insanity in a family do not constitute any obstacle against the contraction of marriages.

But the medical opinion must needs be of a different character in spite of the normal constitution of the direct ascendants, if a large number of cases of insanity have occurred among the blood-relations, and especially if these diseases are demonstrable not only on the side of the father, but also on the side of the mother.

In such cases one may well exclude an accidental coincidence, and admit an actually existent family predisposition; the dangers of the latter may unhesitatingly be described as so considerable either in regard to the person contemplating matrimony or the eventual descendants of the same, as to render the marriage unadvisable.

Prohibition of marriage in direct hereditary predisposition.—Where insanity is demonstrable in the direct line, that is in the father or mother of the individual contemplating marriage, it is not possible to answer in a general way the question whether the marriage should be permitted or not; here, too, each case requires special analysis of its individual features.

Above everything we must inquire into the etiology and form of the mental aberration.

If somebody who is not subject to the influence of an heredi-

tary predisposition develops a psychosis in consequence of an acute infectious disease, such as influenza or pneumonia, or some other acute intoxication, and if the same takes the form of a delirium hallucinatorium, a dementia acuta, melancholia, mania, or acute paranoia¹ there can be no question of any special danger arising thereby to the offspring. The same may be said of course with regard to those mental disturbances which arise in the puerperium on other grounds than hereditary predisposition, and also with regard to those which are caused by cerebral syphilis, if the syphilis itself was not hereditary. It is otherwise in those chronic mental disorders which assume the form of paranoia or periodical or circular psychosis, and in which there is as a rule such an amount of hereditary transmission on the part of the ascendants as to justify in itself an apprehension with regard to the descendants.

In all such cases the question must further be considered whether the son or daughter whose marriage is in contemplation was conceived before or after the beginning of the illness. I agree with *Griesinger* that the danger is greater for the offspring if the father or the mother was insane at the time of conception, in opposition to *Sioli* and *Legrand du Saulle* according to whom the disease of the inheriting descendant sets in independently of the circumstance whether the procreation took place before or after the manifestation of the disease in the ascendant, which means that the predisposition to insanity was already present before its outbreak, and that it must have been communicated to the offspring.

Prohibition of marriage in insanity of father and mother.—If both father and mother are in a state of chronic insanity and it is not possible to prove—which is indeed highly rare—a coincidence of those external circumstances that have been mentioned above as accidental causes of insanity, the dangers to the offspring appear doubled and so great that marriage must be decidedly opposed.

¹There are no two text-books on mental diseases which give the same name to the same morbid condition; my nomenclature follows that adopted in my "*Leitfaden der Psychiatrie*."

Prohibition of marriage in progressive paralysis in the ascendants.—Special mention must be made here of progressive paralysis, on the one hand on account of its great prevalence and on the other on account of the special conditions which arise in regard to heredity. As to those who declare the paralysis to be a syphilitic, metasymphilitic or parasyphilitic disease of the nervous system, the question whether the offspring of the paralytics may marry or not, will by them be answered mainly according to the principles which apply with regard to syphilis.

But it is not only not proved that general paralysis is a syphilitic affection; there are, on the contrary, weighty reasons against this assumption, and first of all, the fact that in about 25% of all the cases there is no trace of syphilis in the history of the paralytic patients. Hereditary predisposition certainly plays in progressive paralysis no such great part as in the functional psychoses. I have already mentioned in my monograph on progressive paralysis (*Die progr. Paralyse der Irren*. Berlin 1880. p. 234) that out of 184 cases of paralysis which I personally observed, hereditary predisposition was demonstrable in 34.8% of the cases, whereas out of 122 cases of functional psychosis the hereditary predisposition was proved in 56.5%.

Others have furnished different figures, which fluctuate within as wide limits as the statements on the percentage of heredity in insanity generally. *A. Westphal* found 5.4%, *Arnaud* 53% of hereditary tendency in paralysis. *Ziehen* gives 40% of hereditary predisposition in paralysis, whilst for mania the figure is 75% and for melancholia 50%.

In the above-mentioned table of *Mayet* there is under No. 6 which gives the admissions of male insane persons with simple insanity into the Prussian lunatic asylums from 1884 to 1897, 30.61% of hereditary predisposition; in the figure giving the accession, for the corresponding period, of male paralytics (18,233 cases) the heredity-percentage is only 18.06%; as to the women admitted during the same time there is an hereditary predisposition in 32.56% in simple insanity, and one of 15.86% (746 cases) in paralytic insanity. Even the most ardent supporters of the eminent importance which hereditary predisposi-

tion is supposed to have in progressive paralysis (*Näcke*) do not deny that a "severe, multiple, hereditary taint is not so frequent in general paralysis as in other psychoses."

If a paralytic father or a paralytic mother does not therefore constitute a very considerable objection to the marriage with one of their children, as is the case with respect to other psychoses in the ascendants, there remains the further question to be considered whether any difference exists between the children who were born before or during the disease of their father or mother.

Scholten (quoted by *Näcke*) has instituted an investigation on this point; 137 children were descended from 23 paralytics who were not hereditarily predisposed but syphilitic; of these 18.9% died in their first year; 26.2% showed nervous disorders, convulsions, or gross deviations of character. During the time when the disease of the father became manifest, 6 children died, 1 child died after 4 weeks in convulsions, the others were nervous or abnormal and one feeble-minded. Within the 10 years preceding the manifestation of the paralysis in the procreator 49 children were born, of whom 48.9% were abnormal or nervous. The other 88 children had come into the world 10 or more years previous to the occurrence of the disease in the father, and only 13.6% of these were abnormal.

This would show that the children whose procreation took place a very long time before the appearance of distinct paralytic signs in the father are more rarely abnormal than those procreated later on and especially than those born during the disease.

There is, however, another point requiring looking into, and which is capable of facilitating the answer to the question whether a paralytic father or a paralytic mother constitutes a marriage-obstacle.

In those cases in which an influence of the paternal or maternal paralysis takes place at all on the mental condition of the child, that influence becomes as a rule clearly manifest at an early age generally before the 20th year. It shows itself then either in the form of mental weakness or by the formation of those characteristics which I have above described as signs of

degeneracy, and in very rare cases by the appearance of an infantile paralysis. Consequently, in the great majority of cases where the paralysis of the father or of the mother is capable of exercising an unfavourable influence upon the mental condition of the child, that unfavourable influence is already clearly apparent at the time of life when marriage is contemplated, in the form of some demonstrable abnormality. The question of the marriageableness must therefore in such a case coincide with the question as to whether mentally abnormal individuals may marry at all. For the rest, it may also be mentioned that a not inconsiderable number of children of paralytic parents remain permanently healthy. In several cases I have been able to ascertain this permanent health of such children up to an advanced age, although they had been conceived and brought into the world by paralytic mothers.

After what has been said I should sum up my view of the subject to the effect that where there is no considerable hereditary predisposition present, where the father or mother became paralytic many years after the birth of the child, and the latter shows no signs of a mental abnormality, a prohibition of marriage on the part of the medical adviser does not seem to be necessary. I should, however, regard such a prohibition as indicated in every case where the danger is enhanced, that is where the father and the mother are or were paralytic.

Dangers to children springing from the marriage of hereditarily predisposed individuals.—Our observations have so far dealt on the whole with the question whether any and what sort of dangers are involved in the hereditary predisposition to mental diseases, and how far the same must be regarded as an obstacle to a contemplated marriage in view of the circumstance that the predisposed would-be husband or wife is liable to become insane. But in the cases of this class it is not only the dreaded eventual insanity which must be taken into consideration, but also—and rightly so—a regard for the future, a fear lest the children of the parents in question should be endangered despite the mental capacity of the latter remaining normal.

It has already been mentioned above that there is a so-called

atavistic heredity, that the hereditary predisposition may in one or even two generations remain ineffective and the insanity break out in a subsequent one.

All those apprehensions, therefore, which exist against the contraction of marriage wherever there is a considerable and especially a direct hereditary predisposition, so that the latter must, in agreement with what has been said, be regarded medically as a marriage-obstacle, are materially added to, seeing that even if the married persons in question remain mentally sound, the children, or at least one or the other among them, are subject to the risk of being attacked by mental disease.

This danger is increased still more if the other married partner is under the influence of the same or some other morbid predisposition which is capable of weakening his or her resistibility, or if the marriage takes place among blood-relations, by which the injurious influences of an hereditary taint become aggravated.

Having now dealt with the importance of the influence of hereditary predisposition on married life and on the eventual offspring resulting from the same, we have further to consider the question whether a person who has already been insane once and become cured, may marry or not.

The marriage of persons formerly insane.—

To answer this question it is necessary to analyse carefully the past disease. As with regard to hereditary predisposition, so here too, an accidentally acquired insanity which arose in connection with, and on the basis of, an acute intoxication, as an intoxication-psychosis, cannot be regarded as a marriage-obstacle, unless that psychosis broke out under the influence, and by the aid of, a considerable hereditary predisposition.

In the latter case, and especially in the female sex, the apprehension is justified that on account of the various injuries to be discussed yet later on, which marriage brings in its train and which, as we know from experience, favour the outbreak of psychoses (puerperium, etc.), a fresh attack will possibly occur.

But if in an individual at about the age which generally comes here into question, namely the second decade or thereabouts, a psychical affection had existed without any clearly

demonstrable outward cause, there is a considerable danger of relapse, particularly because of the just-mentioned injurious influences of marriage.

Menstrual psychoses.—I should only like to make one exception in this respect as regards the female sex, and that is the so-called menstrual psychoses. One sees occasionally in young girls before or along with the commencement of menstruation, more rarely immediately afterwards, psychical disturbances which may sometimes last for weeks and which present as a rule an hysterical character. In these cases the consummation of marriage is generally not only not productive of any special danger, but it frequently brings about an improvement and cure of the abnormal psychical irritability.

There is no need to enter here into a detailed discussion of hysteria itself and of the mental disorders resulting from it, as this disease of the nervous system has already been dealt with fully in the preceding chapter.

The physician must attach special importance to the investigation whether a psychical affection which has existed formerly, or perhaps several times, does not belong to a periodical disease which often develops in the 2nd decade, or to a circular psychosis. Experience teaches that these psychoses make remissions and intermissions, especially at their commencement, and before their full development, so that they may simulate mental sanity.

On the whole the principle must be adhered to, that if an individual had been psychically ill before marriage, and this psychical disease was not the consequence of external somatic influences but mainly the manifestation of a considerable hereditary predisposition, that individual is unsuitable for matrimony, since, especially in the case of women, married life presents dangers, by no means insignificant, in consequence of which fresh attacks will occur.

Deception with regard to former insanity.—

We must not omit here to mention that parents conceal sometimes carefully the fact that their child has already had an attack of insanity or that institutional treatment has, perhaps, already been carried out. They are silent on the point in the hope that the consummation of the projected marriage will have a

beneficial effect, especially in warding off future attacks, and for fear that the disclosure of the former illness might prevent the marriage from taking place and consequently endanger the desired result.

If this hope is afterwards disappointed, if insanity breaks out some time after the marriage, and inquiry on the part of the healthy spouse brings the true facts to light, the result is not only a family feud under which the patient suffers severely, but in not very rare cases an appeal to the law that the marriage be declared null and void. The paragraph No. 1334 of the German Civil Code which applies in this connection says: "A marriage may be disputed by the spouse who was induced into it by wilful deception, upon such points as would, had there been a true knowledge of the case and proper appreciation of the essence of marriage, have prevented him or her from entering into that marriage. If the deception has not been practised by the other spouse, the marriage is voidable only if this other spouse was aware of the deception when the marriage took place."

"A marriage cannot be disputed on the ground of deception on matters relating to property."¹

There can be no doubt that the knowledge of a previous mental disease in a person may easily tend to deter one from marrying such a person.

As to the question whether a person insane at the time may contract a marriage, the answer is obviously surrounded by less difficulty than the questions discussed so far.

The marriage of insane persons.—It does not admit of any doubt that this question must be answered emphatically in the negative. This applies, of course, also to those forms of insanity which show themselves mainly as feeble-mindedness only.

As evident and easily-recognized signs of insanity, considerable melancholiac depression and strong maniacal excitement, make it perfectly clear that the patient is incapable of entering

¹The petition for a declaration of nullity of marriage must be presented within 6 months from the discovery of the deception. § 1339.

into any contract and consequently of going through the legal form of marriage, we are here principally concerned with such cases which consist of mental weakness, either in the form of imbecility or in that of secondary dementia after previous functional psychosis or in progressive paralysis or with those cases which exhibit paranoic insanity with repression of the hallucinations, or finally with periodical and circular insanities possessing clear intervals or remissions.

Even in the case of such patients their parents hope sometimes to derive from marriage a beneficial result with regard to the abnormality of which they are aware, though, perhaps, not appreciating its full extent (often enough the severe significance of the mental weakness is misunderstood altogether); with the casual remark "the boy must marry" or "the girl wants a husband," the necessary search for a prospective son-in-law or daughter-in-law is accordingly instituted. Severe disappointment, sorrow and suffering, and occasionally most tragic family calamities are not long absent.

After the wedding, which is very often in such cases arranged with the greatest speed, the healthy husband or wife soon finds out by the close companionship what terrible misfortune has befallen him or her, and the result is frequently enough that the healthy husband who has no prospect of altering his ill-luck gives way to drink, morphinism or commits suicide, and that the healthy wife who is chained to an insane husband, is attacked by nervous disease, hysteria or insanity.

Women who marry while mentally affected experience not infrequently under the influence of the married state, especially under that of pregnancy and the puerperium, a considerable aggravation of their condition; on the basis of imbecility paranoic delusions occur, the former mild course of periodical or circular insanity changes into a severe one, while the remissions or intervals become shorter in duration and less free from signs of disease.

If an improvement does take place in a few solitary cases during the married life, it is usually of a temporary character only, and displaced sooner or later by a further aggravation.

One thing can be said with certainty, namely that if chronic

insanity—and from what has been said above it is only the chronic form which can here come into question—really undergoes a permanent improvement after marriage, this is so very seldom the case and such an exceptional occurrence, that no reliance whatever can be placed upon it in connection with a projected marriage.

The healthy spouse who was truly ignorant as to the disease of the other (and this applies principally to periodically occurring epileptic attacks or periodically manifest hysterical insanity and also to dipsomania, as appreciable mental disorder and paranoic delusions are not very likely to remain unknown after the usual somewhat lengthy period of courting and engagement) possesses in the paragraph 1333 the means by which to dispute the validity of the marriage.

That paragraph says: "A marriage can be disputed by the spouse who in contracting that marriage was mistaken in the person of the other spouse, or with respect to such personal qualities of the other spouse as would have deterred him from contracting the marriage, had he been aware of the real state of things and possessed an intelligent appreciation of the essence of marriage." (The period of appeal to the law is the same as with regard to § 1334.)

The marriage of hereditarians and degenerates.—What has been stated with regard to the prohibition of marriage with an insane individual applies also to such persons whom I have described above as hereditarians and degenerates.

If the usually very considerable and multiple hereditary predisposition is in itself an element rendering the contraction of marriage of doubtful expediency, the degeneracy apparent in the individual and its peculiar psychical phenomena constitute a decided obstacle against the medical consent to such a marriage.

There may be exceptions where a calm and intelligent husband is able to keep within suitable limits the eccentricities of his wife which rest upon the morbid basis of degeneracy, or, perhaps, to check them by continuing to a certain extent the education which was neglected in the parental house: vice-versa

a sensible wife may occasionally be able so to guide and control her degenerate husband as to prevent the abnormal manifestations from becoming publicly known, entirely or partially. But there can be no true married happiness under such circumstances, and especially none of a uniform duration, seeing that the fluctuations in the psychical condition of the abnormal individual which characterise this condition, can only too easily upset the balance maintained with great difficulty and by great exertions by the healthy partner, and that often enough acute mental aberrations supervene on the chronic state. As long as marriage is not regarded as a remedy for the abnormal married partner, but as a means for bringing about and furthering the happiness of both sides, marriage with a degenerate is entirely out of the question. There are no doubt cases where individuals make it the object of their life to devote themselves to the task of rendering others happy while totally forgetful of their own happiness—under such circumstances the objections against the contraction of the marriage will naturally be disregarded, but then it is the duty of the medical man to emphasise distinctly the apprehensions which exist with respect to the eventual progeny.

But often enough all these intentions to sacrifice oneself, to become the life-long attendant in sickness of the afflicted husband or wife, must finally be abandoned, the original energy is frustrated by the absence of all success in the attempted object, by the want of recognition and gratitude on the part of the sufferer, by the cheerlessness and hopelessness of the future.

There can be no doubt, and daily experience confirms it, that where a wrong or imperfect up-bringing in the parental house, where bad company and deficient control have led a young person, and especially a young man, into devious ways, marriage is capable of exercising a most beneficial effect, provided the other partner is possessed of an energetic and intelligent nature and has the necessary qualities to assert his or her influence for the good.

The badly brought-up and misbehaved young girl can under the influence of married life become an excellent wife and capital mother, the loose young man a steady husband and respec-

table paterfamilias. But this fact of the favourable result of marriage must not be generalised in such a manner as to be adapted also to those cases where the deviation from the normal present before marriage is not due to accidental external causes but is organically inherent in the individual; in this latter case it does not matter whether the cause of the mental abnormality lay in the embryo, in disease-producing influences during the intra-uterine life or in processes connected with the labour-act or the subsequent existence.

In none of these cases is it reasonable to expect a cure by marriage; the favourable influences of the same are quite incapable of healing the illness or the morbid inclination; the most they can do is to hide for a time the outward and visible symptoms of the disease.

It has repeatedly been pointed out that by the hereditary predisposition not the disease is as a rule transmitted but only the tendency to it, and the latter manifests itself chiefly by the diminished resistibility of some organ or other, here of the organ of the psychical function.

Marriage in the presence of a nervous disposition.—Where such a predisposition is present, there is required for the production of the disease something besides, namely an injury affecting directly the general condition or the respective organ.

Under these circumstances it is quite intelligible that where on account of the conditions prevailing, the predisposition has not yet led to actual disease, marriage is capable of contributing its share in preventing the outbreak of such disease by keeping away the injuries coming from without.

If a girl hereditarily predisposed to mental disease is removed from the influence of a predisposed or diseased mother, or transplanted from the surroundings of a nervous family into the hands of a sensible man who can understand the peculiar nature of his wife and treat her accordingly, it is quite possible for the predisposition to remain permanently nothing more, and for the disease not to assert itself at all.

But apart from the removal of the psychically unfavourable influences of the paternal home and their substitution by the

psychically favourable ones of the new conjugal home, the unaccustomed physical activity, the assumption of duties hitherto unknown or neglected, have in so far a favourable effect as the former concentration of all the thoughts round the personal ego, which is not infrequently associated with hypochondriac ideas, gives way under the newly-created conditions to a solicitude for others.

Then, again, if the husband who had previous to his marriage led an irregular life in several directions, committing sexual excesses, taking insufficient or unsuitable nourishment, etc., commences, through marrying, to live more regularly in all respects; if marriage means to the wife sexual gratification and the disappearance of former menstrual troubles and consequently more favourable psychical conditions, it is impossible to deny that marriage is from several points of view calculated to retard the development of the predisposition into actual disease.

In opposition to these beneficial effects of marriage, the latter presents, however, injuries, more especially as regards the female partner, by no means insignificant in number.

Sponsalistic psychosis.—In some cases the engagement alone produces a psychosis (sponsalistic psychosis) mostly of a melancholiac or hypochondro-melancholiac character, without there being any reason at all for the depressed mood, the engagement being, on the contrary, a much desired and longed-for event.

The prospective husband is afraid that he will not be able to fulfil his marital obligations, that he is impotent, that he ought not to get married as he has rendered himself incapable of sexual intercourse by masturbation or sexual excesses, that, having been syphilitic, he will infect his wife and bring into the world syphilitic children, etc.

This hypochondro-melancholiac condition is not infrequently associated with severe anxiety, with impulses to break off the engagement and often, above all, with ideas of suicide. Occasionally the dread with regard to the future finishes by pressing the revolver into the hand of the young man, and in a case of my own experience the act of suicide took place dur-

ing the wedding-feast, the sufferer having up to that moment succeeded in repressing and keeping to himself the last consequence of his fearful delusions.

In the young woman the fear arises that she might not be capable to fulfil her domestic duties, she reproaches herself with not loving her intended husband as much as she ought to do, imagines that she cannot make him happy; sometimes it is anxiety and shyness or even disgust at the idea of the coming sexual embrace, or self-reproaches for past masturbation which give origin to the depression in the disposition.

In rare cases conditions of delirium hallucinatorium or of mania occur as a "betrothal-psychosis."

The conditions are generally of a transitory nature, they gradually slacken and disappear as a rule entirely after the wedding.

In exceptional cases, however, a chronic incurable psychosis develops. Once I saw such a "betrothal-melancholia" in a young girl which got cured after 6 months. In the meantime the prospective bridegroom broke off the engagement. Two years afterwards the young girl became again engaged, and again fell ill after a few weeks, this time with symptoms of an hallucinatory paranoia from which she never recovered.

What should be done in those cases where either the prospective husband or the prospective wife is attacked by mental disease?

Frequently the healthy would-be spouse withdraws his promise of marriage.

From a moral point of view it is no doubt reprehensible to break one's word if the other side is the innocent victim of a misfortune, it is an act of cruelty towards the sufferer which is felt particularly keenly where the affliction is recovered from. The step is justified in those cases only where the healthy prospective partner has been deceived as to the past history of the other, as to former attacks of insanity in the patient himself or herself or in his or her parents.

If the patient does not recover, the question with regard to the contemplated marriage is answered *eo ipso* on the principle that an insane person may not marry; otherwise the deci-

sion as to the future should be postponed until the insanity has been cured.

A quiet chat between the engaged couple will then often enough result in the abandonment of the projected union, seeing that even if relapses do not occur the marriage can hardly turn out a perfectly happy one on account of the constantly present dread that a fresh attack may break out at any moment, or that the eventual offspring may inherit the insanity. Such a decision, that it is better not to carry out the intention to become married, will naturally receive the warmest approval of the medical adviser.

If the parties do not, however, renounce the idea to get married, the duty of the doctor is to call attention to the injuries which marriage involves, and by suitable words of advice to endeavour as far as lies in his power to prevent those injuries from exercising their influence, or, if possible, from happening at all.

If I have spoken here of "betrothal-psychoses," it is evident that I do not include in this category those transient humours of a depressive character which appear especially in women, but occasionally also in men, the principal features of which are feelings of doubt and anxiety with regard to the future. These moods often come on during the pre-nuptial period and cannot be described as psychoses.

Sometimes, though, the symptoms of the illness are little marked during the period of the engagement, or they are kept secret by the patients themselves—but under the influence of the physical and mental excitement of the wedding-night the psychosis may break out in a violent manner, in the form of severe terror or even raving madness (post-connubial insanity, *Skæe*).

In the majority of cases which show themselves as melancholia or as hallucinatory delirium, recovery takes place after some weeks, but as a rule not before the lapse of several months.

(It is clear that these conditions must not be mixed up with the quickly disappearing hysterical attacks which occur often during the wedding-night.)

I have myself seen two such cases in women. In both cases

which took the form of a melancholia, recovery occurred after 5 and 6 months respectively. In one of them a psychosis developed again after the first confinement which remained incurable.

Conjugal insanity.—This develops as a rule one or more days after the wedding, but it must be assumed that here too, like in the psychical perturbation during the wedding-night, the beginning of the illness dates further back. Naturally this applies also to the hysterical psychoses which appear at times in newly-married women, but the origin and commencement of which are of much older date.

Psychoses of pregnancy.—The cases of conjugal insanity belong to the rare exceptions, whereas the psychoses of pregnancy and of the puerperium, especially the latter, are observed often enough.

If a psychosis occurs during pregnancy, the question crops up as a rule whether the gestation ought not to be interrupted by the induction of artificial abortion.

Induction of artificial abortion.—Such an induction of abortion must not under any circumstances take place where the disease is not a psychosis, but an hysterical or hypochondriac disposition, although it is just this kind of women who often approach their doctors with the request to free them of their burden. But where real melancholia is present, or an hypochondriac melancholia, or a uniformly persisting extreme and depressive disposition, conditions which not infrequently increase up to raving fury associated with delusions, refusal to take food, and attempts of suicide—in cases of this description the question of artificial abortion must certainly form a subject for consideration.

These conditions begin as a rule with the beginning of the pregnancy, with a dread that the continuation of the same will prove tormentingly painful, that the confinement will not come off successfully, either because a preceding pregnancy was accompanied by severe physical suffering, eclampsia or other affections or because it was succeeded by a psychosis.

These physiological fears which are generally not unjustified on account of former events, grow further in a rabid man-

ner and assume eventually the above-described severe forms of a psychosis.

In the majority of cases these psychoses are recovered from after the completion of the labour or a few weeks later, more rarely before that occurrence, while the pregnancy is still going on; in others they terminate during the gestation by death in consequence of voluntary starvation or through suicide, while in others, again, an incurable insanity develops.

In view of these facts last mentioned, the interruption of the pregnancy appears to be indicated where the psychical depressive condition sets in already in the first months of the pregnancy; on the other hand, it is unnecessary, as a rule, to institute artificial abortion during the latter months on account of the above-described circumstances, because the remaining time of waiting is then so short that there is not likely to be a considerable increase in the danger, and the psychosis often improves soon after the confinement, although it lasts sometimes for a few months beyond it. At all events I regard the induction of miscarriage indicated where there has already been once before such a pregnancy-psychosis.

Favourable as the prognosis of pregnancy-psychosis is as a rule, if unaccompanied by complications, it becomes worse with repeated attacks and the outcome is not infrequently incurable insanity.

The successful abortion which takes place sometimes also without medical interference, is very soon succeeded in a larger number of cases by a recovery from the psychosis; in others, however, the psychosis continues for some months, the artificially produced miscarriage having no influence on the course of the illness; finally, the psychosis may become incurable in spite of the instituted abortion.

Apart from the melancholiac and hypochondriac conditions, the question of the induction of abortion may also require taking into consideration for the same reasons in delirium hallucinatorium, under which aspect a pregnancy-psychosis often appears, and in the very rare cases of mania.

The performance of the operation is, however, possible here in rare exceptions only, as the unrest of the patients will hardly

permit the same to be done in a proper manner and so as not to constitute any danger to the patient.

Epileptic insanity is as a rule just as little influenced on the whole by artificial abortion or premature labour as hysterio-epileptic aberrations; it is only exceptionally and when the symptoms are especially urgent (refusal of food, attempts at suicide, severe hallucinations) that the induction of abortion can come into question.

The indication for the institution of abortion can, generally speaking, be derived only from the condition of the mother.

The influence of an insane mother on the development of the child is not established with such an amount of certainty as to supply a basis of conduct for the medical adviser.

Experience teaches that an insane mother may give birth to a normal child and that that child need not necessarily in the further course of its existence be affected by insanity.

This means that incurable chronic paranoia and progressive paralysis, unless the condition of the mother necessitates medical interference, are also excluded as indications for the induction of miscarriage for the purpose of preventing the birth of a child which appears predestined to fall a victim to insanity.

As regards the induction of miscarriage let the often-repeated warning be remembered that the same should never be undertaken without a consultation with one or more colleagues.

Puerperal psychoses.—The lying-in period can constitute the cause of origin of a psychosis in various ways.

A pyrexial puerperal infection, metritis, endometritis, endocarditis ulcerosa, pyæmia can produce an infectious psychosis; preceding alcoholism or morphinism can lead under the weakening influences of the puerperium to a corresponding intoxication-psychosis; women suffering from severe hysteria or epilepsy are liable to be seized by a puerperal insanity corresponding to the character of the respective neurosis.

The first-named infectious psychosis begins as a rule 2-7 days after the delivery, and is very often fatal in its course amid symptoms of meningitis, encephalitis, and capillary embolism.

In by far the majority of the cases, the puerperal psychoses are functional psychoses which take, where there is a predisposition present, especially an hereditary predisposition, an acute course under the clinical aspect of a delirium hallucinatorium (oftenest), of a melancholia, mania or paranoia hallucinatoria.

Symptoms of pyrexia are here either altogether absent or at least devoid of any significance (mastitis, colpitis, etc.). These psychoses occur principally in primiparæ and more often if the first labour takes place at a somewhat advanced age.

The commencement of the psychosis, the premonitory signs of which can generally be traced back to the time of gestation, dates from the first few days or at least the first week of the puerperium.

The prognosis is, if it is the first psychical attack, favourable, and the average duration of this functional puerperal psychosis is between 5 and 6 months.

If there has already been a psychical attack before, and especially if that also occurred during the puerperium, the prognosis is considerably worse.

The psychical disease can, further, form the starting point of relapsing, periodical and circular psychoses or pass into incurable secondary dementia (about 20%).

Lactation-psychoses.—What has been said with respect to the puerperal psychoses applies, on the whole, also to the rare cases of lactation-psychosis which are produced in predisposed individuals, either through unfavourable psychical influences (illness of the child, etc.) or through fatigue (staying up at night, insufficient nourishment).

In the majority of cases this kind of psychosis occurs in the 6th to 8th month after the confinement.

Although pregnancy, puerperium and lactation constitute undoubtedly dangers in regard to psychical disease—but as a rule only where there is an hereditary predisposition—we need not on the other hand entertain any exaggerated fears on the extent of those dangers.

The number of individuals who get attacked is, after all, very small in comparison to the number of pregnancies and con-

finements generally, and the percentage expressed in figures would be a very small fraction indeed, if we possessed any reliable statistics on the point.

To many, many thousands of pregnancies and puerperia there occurs now and then a case of psychosis. But there can be no doubt that a considerable hereditary tendency to mental diseases favours the production of such psychoses in a most striking manner. It has, moreover, been pointed out, that favourable as a first attack is in the majority of cases with respect to prognosis, the issue must be looked upon as serious where the psychosis recurs during pregnancy or in the puerperium, as the danger of incurable insanity supervening is thereby very materially increased. From this, it becomes manifest that the duty of the physician is to exercise his full authority in those cases where there has already been an attack of psychosis during pregnancy or the puerperium, in the direction of preventing further pregnancies, and to point out unhesitatingly the dangers of a relapse.

If the doctor thinks it futile in a given case to recommend the prevention of further pregnancies for the future altogether, he should at least insist in describing the occurrence of conception during the next few years as absolutely dangerous.

If conception occurs nevertheless, the question of inducing artificial abortion will have to be taken into consideration, in agreement with what has already been stated above.

Dangers to the husband.—Compared with the dangers which arise in the married state, through conception, to the female sex, the injuries caused by marriage which may lead to insanity of the husband are far less considerable.

In his case, too, there are no doubt psychoses which break out under the influence of the wedding-night. Thus, I have repeatedly seen severe attacks of delirium tremens coming on during the wedding-night in consequence of the abuse of alcohol at the preceding festivity. Impotence, possibly of a psychical kind, may be the cause in a newly-married man of an hypochondriac-melancholiac insanity. Disappointment in the anticipated married happiness, a bad wife, pecuniary cares and troubles relating to the support of the family, each of these

causes is capable of producing insanity in a man predisposed to it—nevertheless, it is only in exceptional cases that the result is not only sorrow and grief, but also a psychosis.

Inducted insanity.—We must, however, in this connection recall those cases in which the insanity of one of the married partners acts contagiously on the other, producing in the latter a mental disturbance.

It is a well-known psychiatric experience that an insane patient is capable of transmitting his fears, his folly, sometimes even his hallucinations, to another individual, predisposed to mental disease, who is in constant attendance on the patient, nursing him and bestowing upon him great sympathy.

The insanity which arises in the second individual is called inducted insanity (*folie à deux*, *folie communiquée*).

Such inducted insanity is often observed in sisters, twins, mother and daughter, who live together. The contagion extends sometimes to the entire family, and affects even members of the household who are not in any way related to it, such as servants, etc. In such a case we speak of *folie à trois*, *quatre*, etc. There is consequently nothing remarkable if an insane husband infects occasionally his wife, or—which happens by far more rarely—an insane wife her husband. The presupposition is here also, that the individual secondarily affected was predisposed to insanity or, as in the majority of cases, more or less weak-minded. It is as a rule paranoic conditions, especially illusory fears of persecution, religious delusions, occasionally also querulous insanity, which are thus transmitted.

If the melancholia of one of the married partners is transmitted to the other, the outcome is sometimes a terrible family tragedy, such as we read about in the daily newspapers, in which the married couple do not only take their own lives but also those of their children beforehand, in order to save them from an existence which can only bring them misfortune, and to remove them out of a "sinful world."

Conjugal progressive paralysis.—Matters are totally different with regard to the origin of insanity in both married partners, where a conjugal progressive paralysis makes its appearance. Here we have not to deal with the transmission

of insanity from one spouse to the other, which seems to be unlikely, seeing that the disease is in exceptional cases only present in both of them simultaneously. The connecting link is here as a rule formed by syphilis. One of the married partners—in most cases the husband—infects the other.

After a number of years the infecting spouse becomes paralytic, and after the lapse of a further interval, not infrequently when the first patient has already succumbed to the paralysis, a similar paralysis develops in the infected partner.

The question remains finally to be answered: What is to be done if one of the married partners becomes incurably insane?

Divorce.¹—If marriage is a tie which compels husband and wife to stand by each other in misfortune also, the fact that one of them is so unhappy as to fall permanently ill should on principle, and especially from the ethical point of view, constitute no motive for the other and healthy partner to separate from him or her.

The circumstances of real life are, however often enough more powerful than questions of principle and ethical considerations.

It is especially the conditions among the poorer classes which dictate under certain conditions unrelentlessly the dissolution of the marriage.

The wife is insane in the asylum, the husband engages to look after his children and the household a young woman who soon becomes his mistress, illegitimate children are not long in

¹Translator's note: This portion of the article is of interest to the English-speaking reader merely as information how the question is regarded by the German law. The law of England, Scotland and Ireland and also that of the United States is in this respect totally different. In these countries insanity does not render a marriage void nor is it *per se* a ground for divorce or judicial separation. Cruelty or adultery practised by a husband or wife who is not insane enough to come under the lunacy law and thus to be liable to permanent confinement in an asylum, entitles the suffering spouse to sue for separation or divorce as the case may be. For the marriage of an insane person to be annulled on the ground that he or she was insane at the time of the marriage, the law requires total insanity, and not merely a certain amount of mental disorder, unless undue influence was exercised upon the person in question. See also footnote p. 631.

coming upon the scene and an unpleasant rivalry arises between them and the legitimate children.

Where the husband does not engage such a person, the children often remain neglected and suffer both physically and morally.

If it is the husband who is away at the asylum, the wife is left at home in poor circumstances. Did the law allow her to divorce her afflicted husband, it would be possible for her to marry again and to give her children a bread-winner and guardian.

In the case of well-to-do families these social considerations are to a great extent absent. But even then it is questionable whether it is right to destroy all possible chance of future happiness in an individual whose married partner is so unfortunate as to be incurably afflicted, and by a disease, too, which renders the object and aim of the married state unintelligible or distorted by delusions and hallucinations.

The prohibition of the dissolution of the marriage annihilates every possibility of happiness on the one side without alleviating the misfortune of the other, whereas a divorce would at least enable one of the parties to seek a fresh happiness by which the unhappiness of the other would not be in the least increased.

Before the Civil Code of the German Empire (*Bürgerliches Gesetzbuch*) came into force, insanity was not recognised as a ground for divorce in the districts of the French *code civil* (Rhenish, Prussia, Alsace-Lorraine, etc.) and also in Württemberg, Mecklenburg, Hessen, the province of Nassau, Brunswick, etc., but was regarded as such in the countries of the Prussian law (*Landrecht*) in Bavaria, Saxony, Oldenburg.

The first project of the *Bürgerliches Gesetzbuch* had not included insanity among the grounds for divorce, principally for the reason that the recognition of this cause of dissolution of marriage seemed the more uncalled-for, as in those countries in which it was not recognised, that is in the districts of the French law and of the common law, no practical demand had arisen for it, as far as it was known.

The committee entrusted with the drafting of the *Bürger-*

liches Gesetzbuch did not disregard the fact that in view of the realities of ordinary life, of the economic disadvantages and moral dangers which threaten the healthy married partner and the children, if the former is, on account of the impossibility to dissolve his or her marriage with a person who has become incurably insane, unable to contract a fresh union, there are weighty reasons in favor of recognising insanity as a ground for divorce.

Notwithstanding all this, the point was not conceded, first because of the ethical objections arising from the nature of the marriage-contract, and secondly because the recognition of this ground for divorce would be frustrated by the impossibility to do full and equal justice to the various considerations and interests arising in connection with the matter, and the necessary preliminaries could only be established by making them so elastic that they would be incompatible with, and injurious to, the regard due to the insane married partner, the general welfare and the estimation in which marriage is held.

"Particularly is it impossible to draw a sharp line of demarcation between the various forms of insanity, and practically unrealisable to distinguish those cases in which every moral companionship is abolished by the insanity and the insane partner may be regarded as mentally dead, from other cases."

But the urgent demands of jurists and medical men, and especially of alienists, succeeded in obtaining a recognition of insanity as a ground for divorce in the second project of the *Gesetzbuch*, and that having received the sanction of the *Reichstag*, the paragraph in question (1569) was worded as follows: "A married person may sue for the dissolution of his or her marriage if the other spouse has become insane, if the disease has lasted at least 3 years during the course of the married life and reached such a degree that the mental companionship between the married partners has ceased, and there is no longer any prospect of this mental companionship being re-established."

A divorce on account of mental disease requires therefore:

1. An insanity of a duration of at least 3 years.
2. Such a high degree of mental disorder as to involve the

abolition of all moral companionship between the married partners.

3. The absence of every prospect that this companionship will ever be re-established.

ad 1. The disease need not have originated during the married life, but it must have been present for at least 3 years of such married life.

But it is not necessary that the degree of insanity which excludes every mental companionship should have existed for the whole of the 3 years.

An amendment to that effect brought before the committee on the *Bürgerliches Gesetzbuch* was defeated, and the qualified insanity was declared as being necessary at the time of the dissolution of the marriage only. Otherwise a temporary improvement in the course of the 3 years would necessitate a fresh period of 3 years. Thus the question whether periodical or circular insanity permits under certain circumstances a dissolution of the marriage also receives an affirmative reply.

At all events, the duration of the disease is in every case a subject to be ascertained by the facts.

ad 2. The difficulty of applying § 1569 depends chiefly on the decision of the point whether in a given case the mental companionship has become extinct or not. The legislator has given us no definition of what is meant by "mental companionship" (*geistige Gemeinschaft*), and the commentaries to the *Bürgerliches Gesetzbuch* as well as alienists and the courts of justice have interpreted the term in most variable, sometimes in exactly opposite, ways (See Bresler, *Rechtspraxis*, etc. Halle 1903).

On the one hand it is required that there should be an absence of the consciousness of the existence of the married state, a condition of complete darkness of the mind, complete imbecility, "mental death," in order to prove the extinction of the mental companionship, other decisions have considered consciousness of the existence of the conjugal tie insufficient to prove the presence of "mental companionship."

The *Reichsgericht* (highest court of justice) in a judgment of May 5th, 1902, has declared that "mental companionship"

means a higher companionship than the mere cohabitation of the married partners, namely one in which both are capable of common thought and feeling. If we take this decision as a basis, the extinction of the "mental companionship" will, for instance, have to be taken for granted in a case of chronic paranoia, with retention of the memory and the preservation of outward appearances, including even a certain attachment for the husband or wife, but which presents hallucinatory and delusional features.

In weak-minded persons, too, there can exist such an extinction of the "mental companionship" in spite of the attachment for husband or wife or even the manifestation of fondness towards him or her; the attachment is in this case a "mental companionship" similar to that which binds a faithful domestic animal to its master, but which cannot be regarded in the sense of the law as sufficient for the indissolubility of the marriage.

ad 3. The law does not require the exclusion of every prospect that the disease will be recovered from, but only that there should be no chance of the "mental companionship" becoming re-established. Those conditions which though incurable in a psychiatric sense are yet in so far amenable to improvement as to make "mental companionship" again possible do not consequently fall under § 1569.

Although, in spite of the uncommonly rarely occurring late-recoveries after a 3 years' duration of the insanity, great caution is nevertheless needed with regard to prognosis, there is hardly any likelihood, where undoubted dementia or an irreparable loss of the intelligence and of the memory has set in, or where a mental disorder which has existed for 3 years has led to a morbid transformation of the whole personality, that "mental companionship" will ever be re-established, especially if these conditions have developed and are developing progressively or have remained stationary for years. The answering of the question becomes more difficult if in the course of periodical and circular insanity considerable remissions and even intermissions occur, and also in chronic manias and melancholias without any material impairment of the intelligence. In all these cases, finally, the question whether § 1569 is on a particular occasion

applicable or not will depend upon the previous course of the illness, a careful study of which by a competent specialist will permit a conclusion to be drawn with regard to the future.

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XXIII

**Perverse Sexual Sensations and Psychological
Impotence in Relation to Marriage**

PERVERSE SEXUAL SENSATIONS AND
PSYCHICAL IMPOTENCE IN RELATION TO MARRIAGE

By Albert Moll, M.D. (Berlin)

1. *General remarks on sexual desire.*

Analysis of the sexual instinct in man.—For the better understanding of the importance of perverse sexual sensations to the married state it is advisable to say first by way of introduction a few words on sexual instinct in general.

The sexual desire of man serves to bring the sperm-cells secreted in the testes in contact with the female ovum by transmitting them into the maternal organism as the one in which human impregnation takes place. Two elements are here required: first, the expulsion from the paternal organism, and secondly the introduction into the maternal organism. The first process is called ejaculation and is effected by means of an impulse, the desire for *detumescence*. This detumescence is sometimes the only manifestation of the sexual desire, as for instance in some idiots who practise masturbation as a physical act, because they experience an organic impulse at the genital organs without at the same time thinking of any other person. As a rule, however, the desire for detumescence does not appear alone; it is on the contrary accompanied by a second desire, that for a woman, which impels the man to seek her touch, her embrace and also her moral society. This desire for another individual is called the desire for *contractation*; it also appears, at least for a time, without any other accompanying desire. There are boys who long before puberty experience a desire to touch female persons, to embrace or to kiss them, and in whom

there is not a single thought of masturbation or of any other act on the part of the genitals. But the desire for detumescence and the desire for contractation combine in the sexually mature normal man, and it is this combination which gives rise to the impulse to discharge the semen on touching a woman or on introducing the member into the vagina, in other words, to perform sexual intercourse.

It is only rarely that the desire for detumescence is absent in a man if the genital organs and the general mental condition are intact. The permanent absence of the desire for contractation, that is, of all sexual desire for another individual, is under similar conditions also something exceedingly rare, whereas a false direction of this desire, for instance, the inclination of man towards man, appears more frequently. Occasionally, it is true, the desire for detumescence and that for contractation may exist separately in the same man, at least for some time. One may entertain for instance true love and high regard for a woman without desiring to have sexual intercourse with her, while this desire is directed to other female persons.

Analysis of the sexual instinct in woman.—

In the woman matters are somewhat different. Since the ovum remains in the maternal organism where it becomes impregnated by the sperm-cell, the sexual desire must not lead to expulsion, that is, to the ejaculation of the ovum. A desire for detumescence exists, it is true, in most women, but it only conduces to the discharge of certain mucous secretions, and not of the ovum. A desire for contractation is also present in woman; it corresponds to that in man, only that it is not directed towards woman, but towards man. The two component parts of the sexual instinct, the desire for detumescence and the desire for contractation are as a rule combined in woman as well as in man, and it is from this combination that the desire arises to have intercourse with man. Very often, though, the desire for detumescence is absent in the female sex, and the desire for contractation is present by itself. In such a case, the woman has no desire for masturbation, no desire for sexual connection or gratification from the same, no desire at all for any process whatever associated with the genitals, but there exists nevertheless an in-

clination for the embrace of man and an interest in the latter. Even the highest degree of psychical love for man which rests upon the sexual instinct and represents to a certain extent the most refined development of the desire for contractation, may be present alone. In other cases, the desire for detumescence and the desire for contractation may in women also exist separately; it is possible for instance for a desire to masturbate to be present in a high degree, without a desire for intercourse or gratification from the same, and at the same time the desire for contractation may exist quite independently, leading to physical and moral attachment of the woman for a man.

Quantitative changes in the sexual desire.—

Permanent absence of the sexual desire is designated as *anæsthesia sexualis*. In reality the latter may be said to exist only if both components of the sexual desire are absent, i. e., the organic demand on the part of the genitals as well as the longing for another person. As a rule, however, such cases are also included among those of *anæsthesia sexualis*, where there is no desire for detumescence, and that, as we are aware, occurs in women comparatively often. A lesser degree of sexual *anæsthesia* which is similarly very frequent in women is called *natura frigida*. The increase of the sexual desire is called *hyperæsthesia*; the latter is naturally capable of giving rise to severe conjugal troubles. If it is the husband who is subject to this *hyperæsthesia*, the wife will soon look upon the frequent demands of her partner as cruelty. If the *hyperæsthesia* is present in the wife, even a normal man is sometimes not capable of gratifying her demands. This is particularly the case, if the wife, as happens comparatively often when she is sexually *hyperæsthetic*, is not sufficiently satisfied after coitus and she desires its repetition after very short intervals. The *anæsthesia* or frigidity of the wife may also easily lead to a disturbance in the harmony of the married state on account of the absence of an important exciting element in the husband, namely the sexual irritation of the wife. This explains why many married men look for the gratification of their desire elsewhere, if the wife happens to be of a frigid nature and does not simulate passion as so many of her wiser sisters very often do. Indeed, every pronounced difference be-

tween the sexual desire of the wife and that of the husband is capable of giving rise to conjugal unhappiness, though very often a natural adaptation of the married partners to one another, especially also with regard to their marital sexual requirements, is instrumental in avoiding all unpleasantness. We may also mention that the mutual gratification is in some cases rendered difficult by organic obstacles, as for instance, a disproportion between the member and the vagina.

It is only natural that medical advice should be occasionally sought by married individuals because of the hyperæsthesia or anæsthesia of their own sexual appetite or that of their partners. Among the remedies which are employed to combat the hyperæsthesia, bromine plays the principal part. Other drugs, as for instance camphor and lupulin are also worth trying, and we may say the same of local ablutions of the genitals. It is of the greatest importance to the hyperæsthetic parts to try by intensive occupation of the mind and of the body to divert from them a too great attention to sexual ideas. For the rest, the treatment is, generally speaking, the same for married as for unmarried individuals. The occupation of separate bedrooms may be indicated if close cohabitation produces excessive irritation of the sexual desire of one or the other married partner.

As regards sexual anæsthesia, it is very often married women, or their husbands on their behalf, who have occasion to consult a physician on this account. Drugs are absolutely useless; neither cantharides nor yohimbin has any other effect than a psychical one. For the affection has its seat in the brain, and not in the genital organs. In women who have had sexual intercourse with diverse men, it happens occasionally that they are not anæsthetic in the presence of only one man; it would therefore appear that the degree of inclination plays here a great rôle. For this reason it is only possible to offer the prophylactic advice that those who are about to marry should consider well whether they love one another, and particularly whether a sexual inclination is present or not. The absence of the latter is occasionally responsible for the sexual anæsthesia of the wife, although gradual habituation is capable of exercising here also a favourable influence, as it often does in other matters.

As regards man, it is necessary to separate from the above-mentioned sexual anæsthesia those cases in which the normal heterosexual imagination is in consequence of sexual overindulgence no longer capable of producing erection. This is seen in persons who have practised masturbation to excess, in debauchees who have worshipped too much at the altar of Venus and thus become, perhaps, accustomed to unnatural and perverse excitations. The normal psychical irritation (the ordinary mental representation of woman) is no longer sufficient to accomplish the changes preparatory to coitus, and especially erection, while the desire for coitus may remain undiminished. A similar occurrence may also take place in some women, particularly in those who have masturbated severely. They experience a desire for coitus, but that desire is no longer capable of affording a sensation which suffices to cause them gratification.

Striking manifestations of the sexual desire.—

We need not necessarily regard a case as pathological if the desire for coitus with a certain woman is absent. Apart from the individuality of taste in general, we must rather consider that we cannot speak of a morbid condition where the outward charms are not sufficient to excite the sexual desire. If the assistance of the physician is therefore invoked by a man who for material reasons has married a rich and decrepit old woman, the absence of the libido and the consequent impotence need not cause any surprise, since certain female attractions are required for the production of erection and ejaculation. The surprise is rather that in spite of the absence of almost every visible exciting element which some of these cases exhibit, there should be any virility at all, such as is often enough observed, though it does not by any means follow that this virility is here a morbid symptom.

Altogether we must not be too rash in speaking of something morbid, if the sexual desire assumes a peculiar direction. If a young man belonging to a better-class family suddenly falls in love with the old and wrinkled cook of the household and is determined to marry her at all hazards, if a dashing young officer marries one day a prostitute who has gratified the sexual

pleasure of all his fellow-officers, the lay public is wont to assume something morbid or even a touch of insanity, while the psychiatrist will not be satisfied with such an assumption from the striking manifestation of the sexual desire unless there are also other sure signs of psychical disturbance. To the same category belong also the extraordinary passions of women, as for instance the cases of ladies of the highest nobility who fall in love suddenly with their coachmen, or where ladies persecute with passionate proposals negroes or other exotic strangers. Nor can we consider as pathological for no other reason those men who in their riper years experience a love-passion which had not hitherto been observed in them and which, if they are married, causes them to neglect wife and family. We should sooner include in the domain of pathology those men, called by *Fürbringer* relatively impotent, who become gradually colder and colder towards their wives until they are one day perfectly impotent in the presence of the latter, despite the full retention of their physical and moral charms, while they continue capable of having erection and ejaculation only in the presence of other women, frequently enough, common prostitutes. *Krafft-Ebing* reckons among the morbid cases also those married women who after having for years loved their husbands and faithfully performed their conjugal duties are suddenly seized with a passion for some entirely unworthy individual into whose arms they throw themselves unreservedly. In agreement with the general sexual anæsthesia of woman the sexual factor may fall back here too; the woman simply desires to possess the man in question, to be together with him. *Krafft-Ebing* emphasizes the episodic character of such an inclination, which sometimes disappears entirely after a few months or even weeks, making room again for the normal married life.

So as not to extend our remarks unduly, we will not further concern ourselves here with the last-mentioned cases of striking infatuation—be they morbid processes or not. They are capable of causing great perplexity to the physician consulted with regard to them. The attitude he should assume will partially be made clear in the observations I will make later on on sexual perversions. Here I will only mention that hardly ever results

are obtained from the remedies employed in such cases by the relatives, who generally believe that they can dissolve such entanglements by reproaches or good advice, a procedure which seldom does any good. Reproaches will hardly ever help to bring about a satisfactory settlement of such occurrences; diplomatic steps are far sooner calculated to achieve the desired end, and in these the physician as such will seldom be called into requisition. A very desirable arrangement is a lengthy separation such as can be obtained by travelling. Confinement in a lunatic asylum which was resorted to in several cases known to me, is from the ethical standpoint scarcely defensible, seeing that such cases do not after all represent insanity of a nature dangerous to others.

Perverse sexual desire.—As the normal sexual instinct creates a longing for the opposite sex, we speak of an heterosexual desire or of heterosexuality. There are, however, cases where the sexual irritation is called forth not by the opposite sex, but by the same sex. In other words, a man gets excited by another man, and a woman gets excited by another woman. This condition is called *homosexuality*. Some are susceptible to the attractions of both sexes, which means that they combine homosexual and heterosexual feelings in such a manner that sometimes the one kind and sometimes the other prevails. Such cases are designated as psycho-sexual hermaphroditism. There are, further, cases where the sexual instinct, though it impels man to seek woman and woman to seek man, yet does so not for the purpose of normal sexual intercourse, but for perverse sexual acts. In these cases the infliction of pain plays an especial part. Thus the man is sexually excited by the ill-treatment, humiliation and suffering of the woman, and the woman by similar endurance on the part of the man. We call these cases *sadism*. Then there are cases where the impulse is to cause pain not to the other person, but to subject oneself to such pain or degradation and to produce in this way gratification of the sexual desire. This condition is called *masochism*. In other cases, again, the desire is not directed towards an entire person of the opposite sex, but to one particular part of the body or to an object belonging to the same; thus for instance a man may get sexually irri-

tated through articles of underclothing belonging to a woman. These cases fall under the category of *fetichism*.

All these conditions in which the sexual instinct presents a qualitative modification are called also paræsthesias of the sexual instinct, perversion of the sexual instinct, perverse sexual instinct or perverse sexual sensation.

Sadism, masochism and fetichism may also be associated with homosexual feelings. A female person may for instance experience a particularly strong pleasurable excitement from the ill-treatment inflicted upon her by her female paramour.

Undifferentiated sexual desire.—According to *Dessoir* the development of the sexual instinct takes place in two periods: that of the undifferentiated and that of the differentiated sexual desire. In the first stages of the awakening sexual sensations the sexual desire may deviate for a longer or shorter time while seeking for something unknown, so to say, and seize the very first object which happens to be in the immediate proximity. The passion of a young girl in a boarding-school may for instance be directed towards one of her fellow-pupils, towards one of the lady-teachers, or an actress; but it may also be an artist living across the way who is the object of her desire; indeed, even animals may in the male as well as in the female sex form an object of passion at the commencement of the sexual development. Accident appears to play here a very important part. The undifferentiated sexual desire accounts for numerous intimate friendships, such as we often see between boys and girls at the time of commencing puberty. They reveal to the experienced observer such a mass of blended sexual sensations that it is impossible to deny their sexual basis. The situation is alike in both sexes, the difference is only that in the male sex homosexual acts occur far more frequently than in the female, because in many female persons not only the differentiated heterosexual desire that appears at a later stage, but also the undifferentiated one manifests itself more in the psychical domain than at the genital organs. But it is possible even at the period of undifferentiation for most violent outbreaks of passion to occur. In boarding-schools it very often happens that two girls become attached to one another psychically and occa-

sionally also physically, and that a third girl who is desirous of becoming intimate with one of them is regarded by the other with such hatred and jealousy as cannot be surpassed by the heterosexual love of adults. Later on, the undifferentiated sexual desire disappears. With puberty developing more and more there ensues under normal circumstances in males a powerful desire for female individuals and in females one for the male sex. It is, of course, possible on the one hand for the undifferentiated sexual desire to make its appearance already before the commencement of physical puberty, and on the other it may remain in existence for many years after the completion of the physical puberty. There are cases where it does not begin to subside gradually before the age between 20 and 30. I am not quite sure whether there is a period of undifferentiated sexual desire in all individuals. That in persons whom we must consider as normal and healthy, it can exist and last for some time, I am not disposed to doubt. The acquaintance with these two periods of the sexual instinct is necessary, because a prohibition of marriage, while justified on account of permanent sexual perversion, is not justified on account of temporary perverse sensations resting upon the undifferentiated sexual desire.

Importance of medical advice at the marriage of perverse individuals.—The study of the sexual perversions is comparatively new, and it is not long since not only the lay public but also the majority of the medical profession were without any knowledge on the subject. The comprehensible disinclination of the patients to disclose to their medical advisers a perversion of the sexual desire, was the cause of the latter groping about in the dark with regard to each individual case as well as with regard to the subject as a whole. And so it came about that when consulted by such people, doctors were too ready to recommend them to get married. Of the misery which has thereby been caused hardly anything has become public property, but it is necessary to point out the serious consequences involved in such an advice. It is certainly true, as we shall see yet, that habituation plays a great rôle in the married life not only of healthy people, but also in that of perverse indi-

viduals: what is at first repulsive and instrumental in preventing erection and ejaculation in man, may in time by familiarity lose its forbidding character. But the probability of such an issue is often so slight that one is not justified in incurring the grave consequences associated with a recommendation to marry. The responsibility being so great, it is therefore the duty of the physician, when consulted, to withhold his opinion until after he has examined the patient and the circumstances connected with the case most carefully and exhaustively.

It need not be supposed that it is superfluous to enter into a discussion on the marriage of sexual perverts, because perverts refuse to have normal sexual intercourse, and do not consequently wish to get married. For many homosexuals embellish their propensity with the assertion that it is not a morbid one, that nature's intention is to produce by homosexuality the unfruitfulness of certain individuals and the extinction of their race, that nature does not wish all men to procreate descendants, and that she renders some human beings incapable of propagation just as she does with a number of bees. I do not wish to argue minutely that the whole of this reasoning is nothing but a fallacy, since what applies to animals does not necessarily apply to human beings, and since the circumstance that nature must have had some definite purpose in view when creating homosexuality does not exclude the notion of its morbid character. To go into more details respecting this point would be superfluous, as the fact is that there are homosexuals and other perverts who do marry.

The motives inducing perverts to marry.—

Of course, many of these never think of consulting a medical man before their marriage. The majority have motives for getting married which are of far greater importance to them than considerations of their own health, of that of their partner or offspring. Influenced by selfish motives, they marry, heedless of the severe results which their perversion is capable of producing. Some do not feel disposed to miss the opportunity of improving their material position by a rich marriage, others may be impelled by passionate love: take, for instance, the case of a man who has sexual sensations for both sexes, who is in

other words a psycho-sexual hermaphrodite, but who suddenly falls passionately in love with a girl, whom he marries without considering whether his homosexual propensity is a contra-indication to marriage or not. Or take another case: There are men who are sexually excited only by women with masculine qualities or even by homosexuals only. Such a man is easily deceived by the passionate love which binds him to an homosexual woman, and if this woman, in spite of her sexual disinclination towards the male sex, marries for material or social considerations, most calamitous results may arise from that marriage. Women also marry for the same selfish reasons as perverse men. An homosexual woman whom her husband divorced after 8 years of married life declared to me: "I married, because it would have been very unpleasant to me to remain an old maid"—a motive, by the way, which very often impels even non-perverse girls to get married. Others look upon family life as something desirable, and there are homosexual women particularly, who long for motherhood. There are further cases where, in spite of the absence of all inner desire to get married, marriage is nevertheless contracted for certain definite reasons. In noble or dynastic families, for instance, this is done to prevent the extinction of the line; in other cases material considerations make marriage a desirable step; one of the most important motives is, moreover, the desire of individuals who have brought upon themselves the suspicion of homosexuality to rehabilitate themselves, so to speak, by the contraction of a regular marriage. They forget or wish to forget what fate they create thereby for themselves, their wives or their eventual offspring.

From all this it becomes evident that there are numerous motives for the marriage of sexual perverts, and such people will only in very rare cases try to obtain beforehand proper medical advice. But even when such candidates for marriage do consult a doctor before the consummation of their design, they do so very often not for the purpose of eliciting an unbiased professional opinion. Experience teaches, rather, that their object is to lull their own conscience and that they desire to make use of a medical man as an instrument in that direction. Such patients do not wish to hear what the best course would be

from the standpoint of hygiene and morality, so they try to prejudice the doctor in their favour as much as possible and to extract from him that advice which is to them the most agreeable one. If the doctor's opinion goes the other way, fresh motives are adduced again and again, in order to cause him to change his mind, particularly with the object of inducing him to give his consent to the marriage.

Self-deception of perverts.—How much some patients of this class like to deceive themselves is seen especially in the way in which they very often admit the perversion only when driven into a corner. They are wont to present themselves before the doctor in the first instance on account of their impotence. They tell everything; admit previous masturbation and other sexual transgressions. But they omit to mention the principal thing, they are silent on the real cause of the impotence, i. e., the perverse sexual sensation. Misled by a false sense of shame they try to convince themselves that it does not matter very much, and unless the doctor of his own accord puts direct questions tending in that direction, he generally remains ignorant as to the true state of affairs. He will most likely in such a case diagnose a neurasthenic or psychological impotence, while in reality it is the perverse sensation which is at the root of the matter. For this reason it is imperative for medical men to ascertain by careful questioning in every case in which they are consulted on account of impotence, and particularly if their opinion is sought with regard to the point of marriage, the minute details of the character of the sexual desire. This applies equally to masturbation. Just as it was usual formerly not to examine minutely into the causes of impotence, so it was also with regard to masturbation; they used to prohibit it, and in any case to recommend coitus or marriage. At the present day, however, we always inquire into the cause of masturbation, and we very often find that perverse sexual sensation is at the bottom of it. For if a man cannot possibly obtain the gratification adequate to his desire, he tries to supplement it by masturbation. Without telling the doctor about the perversion, some patients solicit his advice with regard to masturbation in which they suspect an obstacle to marriage, and it is therefore

necessary in these cases also to investigate closely into the character of the sexual instinct. As the sexual perversion of the wife is also of great importance in the married state, it is often advisable to ascertain the respective conditions in the young girl. That great tact is required in a matter of this kind, goes without saying. And that many a young girl would sooner tell the truth if left alone with the doctor than if her relatives were present at the consultation, is a well-known experience. As a very useful means for finding the right track I may mention the inquiry into erotic dreams: normal sentient individuals have normal erotic dreams, those who are perverse are also visited in dreamland by perverse representations. Often enough the doctor gets to know something of this perversion when it is already too late, and when conflicts have broken out in a marriage which had been entered into without proper medical advice. This happens far more often than one would judge from what is publicly known. The milder forms of perversion remain a permanent secret so that neither husband nor doctor gets to know anything about them. It is therefore totally impossible to estimate the number of individuals who are affected with slight perversion. In the severer cases, however, conflicts become unavoidable, and these are often of so serious a nature that the assistance of the doctor must finally be requisitioned.

That sexual perversion does not frequently form a subject of medical consultation with regard to marriage is naturally due to a great extent to the sense of shame which forbids a confession. Sexual perversions are always abhorred by the public or at least regarded with contempt. And besides, there are few spheres in which prevarication and insincerity are so rampant as in that of the sexual life.

Difficulties in the diagnosis of perversion.—

We must also bear in mind that in most of the other affections which play a part in the subject of marriage, f. i. venereal diseases, tuberculosis, heart-disease, etc., etc., there are objective and recognisable symptoms. In this instance, however, we have to deal with an affection of the instincts which can only become manifest by communications on the part of the pervert, unless

the physician happens by some accident to be aware of his patient's perverse intercourse, and thus in possession of knowledge calculated to lead him on to the right course. If the father of a young girl desires to be informed as to the state of health of his future son-in-law, and both have agreed upon the medical man to be entrusted with the task of conducting the inquiry, such medical man cannot, though he be a most able practitioner, detect by the minutest examination any sure signs which would point to sexual perversion, even if the latter is present in its most pronounced form. Because the cases in which physical qualities of a nature contrary to the respective sex are present in association with homosexuality, *f. i.* female larynx, female development of the breasts in man, are relatively very rare, quite apart from the circumstance that the presence of such a symptom is no proof of the existence of homosexual sensations. Other qualities, the magic look and other distinguishing signs by which some still maintain that they can recognise homosexuals, belong to the fairy-tales of which the world of the perverts has so many. At all events it is advisable that the relatives of young girls should not place too great reliance upon one apparent good quality in the intended husband, namely his severely moral life. It does happen occasionally among young men that the one or other attracts attention by his complete abstention from all intercourse with the female sex, gaining thereby the reputation of being an extremely chaste young man. But how very frequently such chastity is the covering cloak of a perverse intercourse practised with the utmost secrecy, is well known to the expert. For this reason it is as well that the friends of marriageable girls should be advised to be on their guard not only with respect to such men as are known to be leading a disreputable and immoral life, but also in regard to those who make a show of their immaculate morality.

Of course, it is not to be expected that future parents-in-law will often discuss with their future sons-in-law the latter's sexual proclivities. For are there not people who consider it even unseemly that the father of a young girl should ask her intended husband about the state of his health? They think very likely that the ideal relationship which rests upon love would thereby

suffer degradation. Such objections must not, however, be taken too seriously. Seeing how often father-in-law and son-in-law have a free interchange of views as to the material foundation of the future marriage and particularly also with regard to the sum to be contributed by the former towards this object, there surely cannot be anything very derogatory in a serious conversation on the state of health of the parties contracting the marriage. And if we bear in mind that the perversion of the sexual instinct is of very frequent occurrence, and that it is just now the subject of extensive researches, we cannot from the moral point of view find anything objectionable in a conversation relating to the sexual instinct, any more than in the question whether the candidate for marriage is syphilitic or not. It is not morality which decides on the propriety of such discussions, but conventional customs, which are often, however, apt to change rapidly in deference to the dictates of science. A consideration of the connection between marriage and sexual perversion is therefore not useless as there may be some who will let themselves be guided by it, and their number will probably increase in the future.

At any rate, the dangers which sexual perversion causes to the married state are sufficiently great to warrant their detailed examination. The significance lies in several circumstances. In the first place the virility of a man may become diminished or get lost entirely through a sexual perversion. Secondly, it is possible for sexual perversion to render intercourse so unbearable for the wife that she may decline to practise it altogether. The relations between the married partners suffer not only on account of the differences which ensue immediately from the prevention of copulation, but thirdly also by the absence of the normal moral basis of the reciprocal relationship. Fourthly, sexual perversion leads not only to masturbation, but also to extra-nuptial sexual intercourse. Fifthly, social or legal disagreeable results may arise by the perversion leading to criminal or otherwise objectionable actions; and finally there may occur injuries to the offspring, partly in the shape of hereditary taint, and partly in the shape of unfavourable impressions created by the disturbed married state of the parents or by the

general behaviour of the sexually perverse father or sexually perverse mother.

2. *Homosexuality.*

In examining the relations between the married state and sexual perversion it seems advisable to consider first the subject of homosexuality, as many things will thereby become clear in regard to the other perversions.

Influence of marriage on the disappearance of homosexuality.—Let us see first whether marriage is capable of contributing to the disappearance of this sexual perversion. There can be no doubt that occasionally this is the case. Like upon so many other inclinations and propensities, so upon the sexual instinct does habit exert an influence, and not only upon the normal but also upon the perverse. It must not be argued that perversity is a consequence of congenital predisposition and that a correction by influences is therefore impossible. Despite the circumstance that a number of authors deny this supposition and that they always find the causes of perversion in influences acting in the course of life, it is an established fact that even congenital qualities can be influenced by actions operating after birth. Even the growth of parts of the body, although it tends in certain directions on account of congenital dispositions, can be artificially altered. I will merely mention here the mutilation of the feet in Chinese women, and the displacement of the liver in consequence of tight-lacing. And just as it is possible to modify congenital physical tendencies, so we can do the same with congenital psychological dispositions. If we suppose therefore that in a certain case there exists an innate inclination towards one's own sex, it does not at all follow that it is not possible to eradicate it by influences during life, for instance by permanent abstention from homosexual attractions and permanent action of heterosexual excitation.

It is necessary to emphasize this sharply, and mainly because it is absolutely denied by some people. It is particularly those who agitate in favour of declaring homosexual intercourse unpunishable and deserving of social equality, that insist upon

the impossibility of altering the homosexual sensations. They seek in this way to advocate the view of the innateness of homosexuality, or in other words, its freedom from self-blame, and secondly to demonstrate the futility of punishing the intercourse for the purpose of correction. But we may just mention, by the way, that one can arrive at the same conclusions even if one attributes a certain effect to the influences of everyday life.

Whether we regard therefore homosexuality as congenital or not, we are bound to admit that influences during life can play an important part in the eradication of the perversion. Among these influences we must also include in particular the frequent impression effected by the attractions of the other sex through intimate companionship, through physical and moral association. Sometimes the homosexuality disappears spontaneously through the action of such heterosexual excitations. Numerous cases of passionate girl-friendships of a sexual, that is of course homosexual, character prove this. No matter how great the passion may be, and no matter how violent the jealousy in connection with it; the whole relationship may become dissolved by the arrival of a man upon the scene, and make room for an heterosexual attachment. Few influences of life favour the development of homosexuality so much as prudish separation of the sexes during maturing youth, and we may say that this applies to boys as well as girls. Permanent fellowship with a person of the opposite sex is even far more capable of causing the disappearance of perverse inclinations than occasional association. It is true that later in life when the homosexuality is fully developed and after it has existed for many years, such a favourable issue will not take place easily, but in younger people it is quite possible to look for a complete extinction of the perverse desires under the influence of habituation to the attractions of the other sex. Girls have in so far the advantage over young men that they marry as a rule much earlier than the latter, who for social reasons do not generally enter the matrimonial state before they have reached an age at which it is hardly possible to expect a transformation of well-marked homosexuality.

The less pronounced the sexual perversion, the easier it is

to remove it, and the more favourable the effect of marriage. There are cases of psychosexual hermaphroditism which manifest sometimes a preference for the same sex and sometimes for the other, and where opportunity exclusively plays a part. It is clear that just in these cases marriage is most likely to act beneficially. Nevertheless the favourable effect is sometimes absent altogether. I know a married couple where the husband entertains the most sincere affection for his wife, whom he cherishes in every respect and with whom he has normal sexual intercourse, and who nevertheless experiences homosexual desires as soon as he meets accidentally a type of man which appeals to him sympathetically. It is therefore necessary to ascertain if possible in the first instance when the question of marriage crops up, what influence female attractions have on the disappearance of the homosexual inclinations. But for this purpose it is hardly necessary, I should like to observe, to institute the brothel-treatment so eagerly recommended by some. The self-observation of the man during his platonic intercourse with the female sex is generally of greater value than experimental coitus with prostitutes. Successful copulation does not prove the real existence of the susceptibility to the attractions of woman, which is one of the preliminary conditions of marriage, and on the other hand impotency in the presence of a prostitute is no evidence that a respectable woman would not produce in the man in question sufficient sexual excitation. It is the business of the experienced physician to find out by questioning the candidate for marriage whether the heterosexuality suffices to allow him to get married.

There are, further, many psycho-sexual hermaphrodites in whom homosexual inclinations arise only if they have not practised heterosexual connection for a long time. So long as the man has regular intercourse with woman, there is no sign of homosexuality. It is obvious that the accumulation of semen is in these cases a preliminary condition of homosexual sensation, which is therefore eliminated by regular heterosexual intercourse. Under such circumstances, menstruation, pregnancy and the puerperium as well as illness of the wife may become sources of danger to the husband if he is thereby prevented

from banishing his perverse desires by regular intercourse with the wife. We must not forget however, that after all, the same objections, though they be of an heterosexual character, arise in regard to the married life of normal individuals, if the wife is prevented from having sexual intercourse by the above-mentioned conditions. Sensible practitioners have therefore long since come to the conclusion that the systematic advice given sometimes to married women to avoid all sexual intercourse, for instance, during pregnancy, is fraught with the greatest dangers, and that it is necessary in individual cases to weigh the risks which such advice involves in the direction of inducing the husband—or even forcing him—to seek sexual intercourse elsewhere than in the conjugal bed. (Compare with p. 225, etc.)

To illustrate the influence of marriage on the attempt to eradicate homosexuality, attention has been called to the not very rare occurrence of homosexual intercourse among Catholic priests, for which celibacy has been made responsible. The matter is, however, not quite so simple, and with regard to some cases, perhaps, that Catholic priest is right who tries to explain the situation otherwise. He thinks that male homosexuals distinguish themselves already in childhood by their female qualities; since clinging affection is one of the latter they soon attract the attention of the priests by making themselves useful to them, a circumstance of particular utility in the Roman Catholic Church-services. As a consequence they would come in contact with the priests at an early age and be influenced by the latter in the choice of the ministry as a profession. Even if we admit unhesitatingly that this explanation is acceptable in many cases, it cannot nevertheless be denied that the separation from the other sex favours homosexuality, and that association with the other sex has an opposite effect. Experience also teaches that constant fellowship of persons of the same sex to the exclusion of the other sex, induces to homosexual intercourse such persons as would not under other circumstances have recourse to it. I may mention for instance the homosexual intercourse on board ship during long sea-voyages. This also tends to prove that marriage may be a favourable factor in the repression of homosexual inclinations.

Of course, the effect of habituation cannot always be foretold with certainty, and we must remember that it may also lead to indifferentism. The above-mentioned cases of relative impotence of some husbands in the presence of their wives point that way. Nevertheless, we can find in habituation at least a material aid in the development of heterosexuality, and I consider therefore a prolonged platonic companionship between the homosexual individual and a female person a desirable experiment if we wish to estimate correctly the value of habituation in any given case.

Prognosis of homosexuality in the married state.—The constant favourable action of habituation with heterosexual excitations will as a rule be most powerful where there are no other morbid symptoms or hereditary predisposition present. This is therefore a point worth remembering, and in addition to the circumstance that the offspring is also subject to danger (an item to which we shall soon return) great importance will have to be attached from this standpoint to hereditary tendencies and the general physical and moral constitution.

As regards the male sex, the question is also important whether the homosexual attraction is exercised by younger or older individuals. We can distinguish 3 groups: excitation by completely mature men, for instance those of about the age of 20; secondly, excitation by half-adults between the ages of 15 and 20, and thirdly the cases where the excitation is produced by immature boys. There are, of course, also transition stages between these three groups. Only in the first group can we speak of a real inversion, of a transformation of the sexual instinct, since it is only the man who feels here like a mature woman whose sexual feelings are excited by a perfectly developed man. The sexual excitation by unripe boys is from a social and forensic point of view far more serious than the excitation by grown-up men. For although § 175 of the German Penal Code punishes all unnatural prostitution between persons of the male sex, most of the acts performed between men belong nevertheless not to the class of unnatural prostitution but to that of infamous actions, that is, they are not punishable according to § 175. On the other hand, sexual actions with boys under

14 years as well as with girls under that age are punished with penal servitude (*Zuchthaus*) even if they are only of an infamous character; among such is included the mere touch if it takes place for the purpose of creating sexual excitation. To that extent sexual excitation by boys is far more serious than that by men; but from the medical and psychological stand points the cases which are forensically the severer are to be regarded as the lighter. Boys are far more like women than they are like grown-up men; the sexes which comparatively resemble one another up to puberty become afterwards more and more distinct, but in such a manner that the woman retains through the delicacy and softness of her skin as well as in her entire nature a far greater resemblance to boys than do grown-up men. Hence experience shows that there are quite a number of men who, though they generally feel sexually excited in the presence of mature women, do nevertheless occasionally, and almost episodically, undergo the same excitation by immature boys. And although it is but natural that the enormous social and medico-legal dangers must be taken into account when the subject of marriage is under consideration, there is on the other hand a favourable factor in the circumstance that such men are more likely to become attached to a woman and to become habituated to her, than one who finds himself attracted by adult men, who, in other words, suffers from sexual inversion.

Impotence of homosexuals.—The foregoing observations appear to explain the favourable influence of marriage over some cases of homosexuality. But though marriage improves sexual perversion in a few cases, it cannot be denied that it not infrequently reacts unfavourably on both partners. The pronounced homosexuality of the one partner creates unnatural and unhealthy conditions; the homosexual man is very often impotent towards his wife; neither erection nor ejaculation can take place. Under ordinary circumstances impotent towards women, he places reliance, when getting married, on the hope that he will succeed in creating virility by artificial means, for instance, by imagining during the attempt at copulation that he is having intercourse with a man of whom he is fond. Apart from the immorality surrounding such intercourse which can

only take place by means of phantastic pictures, and in which the wife is most woefully deceived, there is to be added that such an artificially exercised coitus leaves almost invariably behind it a feeling of lassitude and weakness, and that it is not accompanied by a feeling of satisfaction such as is caused by normal intercourse. In other cases manual friction is resorted to in order to bring about erection. Very often this fails in attaining the desired object, and in any case it is not difficult to imagine what sort of sexual cohabitation that is which requires such adventitious aids for its performance. Some try to enhance their virility by the use of alcohol, a proceeding which, besides being totally unreliable, can certainly not be looked upon as proper. Coitus practised by means of these artificial measures has correctly been described by a pervert as "onania per vaginam." It may not only produce a temporary feeling of faintness, but the continued artificial irritations may become causes of disease and bring about a severe functional affection of the nervous system. In many cases the horror at being touched by a female is so intense that erection cannot be produced by any artificial means whatever; the wife is tortured for hours together, and the individual in question is probably proud in the end if he achieves his object at all. We must not lose sight of the fact, that notwithstanding the frequency of sexual anæsthesia in women, many of those who are married have a craving for coitus from which they expect gratification, and that where sensuality is strong it cannot be immaterial for the nervous system whether this satisfaction is obtained. Have not some gone even so far as to suggest that the reason why so much hysteria is seen among the nuns in convents, is partly because they miss the gratification of the sexual desire? But even if we do not admit this to be correct, the situation is, indeed, very serious if the wife is brought to the highest point of excitement by the exertions of her husband without her experiencing any sense of orgasm. Such an excitation without gratification represents a severe injury to the nervous system. The more sensual the nature of the wife, the more serious will be the consequences, and though it may be from an ascetic point of view praiseworthy conduct on the part of the wife not to insist on her rights, the

causation of sexual excitement without the necessary gratification is from the hygienic standpoint most decidedly reprehensible. That the marriage of homosexuals is frequently dissolved after a short duration, cannot under such circumstances cause us any surprise.

The danger of impotence is especially great in the presence of a virgin, since the defloration requires here a much higher degree of erection than the introduction of the member into the vagina of deflowered women. The fear of the first night causes therefore to many homosexuals the greatest anguish. Perhaps, against their will they have been forced by their relatives into an engagement to marry, their renewed protestations were met by repeated attempts at persuasion, until they were obliged to give in; with the greatest reluctance they became betrothed, and now shortly before the approaching marriage they have to pretend that they are happy. The dread of impotence, the sense of shame, and everything connected with the miserable business, can lead to most disastrous results, and cases are known to me in which suicide immediately before or after the marriage ceremony, was due either with certainty or with the greatest probability to this feeling of terror. The cause of suicide was a mystery to the nearest relatives; but the details which became known afterwards through a few of those who were initiated in the affairs, or by letters left behind, left no room for doubt as to the real cause of the self-destruction. In other cases of which I know, where homosexuals married without, or contrary to, medical advice, cohabitation became possible only after an operative rupture of the hymen by the surgeon's knife. I have myself recommended this procedure several times after having been in consultation with both parties. Although it is not permissible to induce the wife to consent to this operation by means of false pretences, such an interference seems to be perfectly justified if the wife agrees to relieve the impotence in this way. As a matter of course no doctor has a right to inform the wife that homosexuality is the cause of the husband's impotence, unless he has the latter's full permission. I do think, however, that the best course for a medical man to adopt under such circumstances is to refuse to have anything

to do with the case, if his interference demands on his part any deception of the other partner. He may offer his assistance only on the understanding that he be relieved of his obligatory silence towards husband or wife respectively, and that it should be left entirely to his discretion and judgment to refer only to what he considers necessary.

It is, of course, necessary to consider not only whether the individual in question is potent at all or not, but also the extent of such potency. The strength of that potency ought in a husband, under circumstances of harmony, to be equal to the sexual requirements of the wife, or at least not materially unequal to them. In this respect, however, a great deal must be left to accident. With the exception of a few rare cases, it is under our present customs as a rule impossible to obtain an inkling before marriage as to the amorousness of female persons. And yet there can be no doubt that the unhappiness of many a marriage arises from the want of correlation between the two parties. All those outward signs, by which over-clever individuals pretend to be able to tell the amorousness of females, the look, the shape of the nose or mouth, are of no value. I know women who on account of such external distinguishing marks are reputed among their male acquaintances to be extremely sensual, and who do not possess the slightest trace of libidinous propensity. We must therefore, in considering the demands made upon the virility of the husband, take the average woman as a basis. If the presumption is, that he is only capable of performing the sexual act with difficulty once in two weeks or so, he should be dissuaded from marrying, as otherwise serious conflicts are sure to break out between the married partners within a short time after their union. These will occur even if the wife has no particular desire for coitus, but is anxious to practise it either because she is longing for maternity or because she wants to become practically acquainted with the great unknown act. Some wives demand sexual intercourse principally because they believe that they control their husbands in this way and because they wish to reassure themselves as to their husband's fidelity. But no matter whether intercourse is desired for sensual reasons or on the strength of calculations,

we must not advise marriage to a man with markedly reduced virility any more than to one who is completely impotent, if a pronounced perversion is responsible for the diminution in the potency. For although habituation may in younger people and in lighter cases play a considerable part, it is not so effective as to give us cause to expect a transformation into heterosexual intercourse of the pronounced inversion of the sexual desire in a thirty-year-old man, by means of permanent cohabitation with a woman. Those cases are probably most unfavourably situated where at the same time the other psychical qualities of the individual are developed contrariwise to the sex, in other words where a man behaves more like a woman, or a woman like a man, where occupation and inclination correspond entirely to those of the opposite sex.

Homosexuality of the wife.—From the purely physical point of view homosexuality of the wife naturally plays a far less important part than that of the husband, seeing that the share of the former in cohabitation is only of a passive character. Whereas in the husband erection, which is generally brought about by the charms of the wife, is a necessary condition of coitus, in the wife a process similar to the erection in the husband is not necessary either for coitus or impregnation. This is why intercourse is possible even if the wife is not sexually excited by the husband. This circumstance must be borne in mind in regard to the intercourse between a homosexual wife and a normal husband. Of course, the wife does not in such cases experience any sensual pleasure. This is not, however, necessary for impregnation, notwithstanding the opinion of some that the entrance of the spermatozoa into the uterus is facilitated by the rhythmical contractions which accompany the orgasm of coitus in normal women. At any rate we do know that there are many heterosexual and homosexual women who become impregnated although they experience no sensual pleasure during intercourse.

Sometimes however, the homosexuality of the wife is associated with an intense aversion to normal intercourse. Some wives endeavour to conquer it like homosexual men, by imagining during the intercourse with their husbands that they are

practising lesbian connection with some other woman. But even this cannot in some cases diminish the disgust at the intercourse, and such wives refuse to cohabit with their husbands. I know married couples where the wives urge all sorts of reasons, such as fatigue, pain in the abdomen, and so on, to prevent the husbands from having intercourse with them at all or only at very rare intervals, but where the real motive is the dislike of being touched by their husbands. I know of one homosexual married woman who remained for months under the treatment of a gynæcologist to whom she pretended to be suffering from all kinds of complaints of the genital organs, mentioning in particular that she had severe spasms in the abdomen after each sexual intercourse. The whole was nothing but a farce; she merely desired in this way to get hold of a plausible excuse for refusing to have intercourse with her husband. Where the wife has such an aversion to coitus, the influence of the perversion on cohabitation is naturally just as important as when the latter is impossible owing to the absence of erection in the husband. Besides, even where the dislike of the wife does not go quite so far, the gratification of the husband's desire is rendered very difficult by the absence of counter-affection on the part of the wife, since the reciprocal frictions are thus wanting which favour not only the ejaculation but also the sensual pleasure.

Disharmony of marriage where one of the partners is homosexual.—We have further to consider that an harmonious married life is very much promoted by a sexual cohabitation which affords gratification to both sides or which is at least not loathsome to either of them. If one of the partners is perverse and experiences in consequence disgust during intercourse, not only is it impossible for both sides to feel satisfaction, but the danger is very near that the disgust will also give rise to moral antipathy. It is true that many sexually anæsthetic or frigid women also exhibit an absence of real pleasure during intercourse, but still they do not experience such a disgust at being touched by their husbands as is done by some homosexual wives. Moreover, this disgust at being touched is present not only during cohabitation, but also at other times, and

this applies to the homosexual husband as well as to the homosexual wife. Such a husband can kiss his wife with reluctance only; a lady who was married to an homosexual man—the marriage is now happily dissolved—describes the typical way in which he used to kiss her. He would always draw in his lips so as to make the touch as little close as possible, because a hearty kiss was not only a matter of indifference to him but actually unsympathetic. To such a man the kiss of a woman is just as disagreeable as to a normal man the kiss of another man. And no less disagreeable is to a marked homosexual woman the kiss of a man. The sexually anæsthetic but heterosexual wife is capable of experiencing towards her husband all the signs of love; she takes an interest in him, likes to kiss him, and so forth. Of this there can be no question in the homosexual wife. Even if for material reasons she simulates passionate affection while having intercourse or while being embraced, and she succeeds in deceiving her husband for a time, she is sure to forget herself once sooner or later, because she does not possess the real inner incitement, because she has not the feeling of love.

In addition to the difficulties which are created for the sexual cohabitation by the homosexuality of one of the partners and apart from the repugnance with which reciprocal approximation takes place, circumstances which cannot fail to have an influence upon the married life of both husband and wife, it also happens that the other general relations of the married state are equally disturbed by the homosexuality. Marriage is not only a cohabitation for the purpose of sexual connection. And for this very reason the existence of virility is not in itself sufficient to cause us to recommend marriage. Even if we regard prudential marriages as morally permissible, and discard all romantic extravagances, we must nevertheless demand a moral inclination of the two parties towards one another, seeing how imperative it is for a happy marriage. Pronounced homosexuality of one of the parties precludes the possibility of conjugal comradeship, it also precludes the possibility of an harmonious married state which rests upon sexual cohabitation. That all sorts of strifes may result in consequence, it is not necessary to enlarge upon any further.

Condemnation of Homosexuality.—There is the additional element that homosexuality is in itself repugnant to most people. We have only to remember how society condemns all homosexual intercourse. Even among prostitutes as *Parent Duchatelet* has already observed, this practice is looked upon as something base. This being so, normal people are never disposed to join either themselves, or individuals closely related to them, with homosexual persons. I do not take here into account the criminality and punishableness of the homosexual intercourse, but desire to point out merely that homosexuality is, as such, a quality which acts upon other people as disgustingly and repugantly as, say, a repulsive skin disease. The description of the homosexual as a hermaphrodite in body and soul is quite correct, and just as physical hermaphroditism is æsthetically repulsive solely on account of its disharmony, so homosexuality is repulsive for the very same reason. Whether the homosexuality has been acquired during life, or whether it is to be regarded as congenital is immaterial; the whole represents a sort of malformation, and from the ethical point of view the question is worth considering whether marriage with such an individual ought to be inflicted upon the other partner.

So long as the homosexual is single, the perversion constitutes a danger to him alone; but when he joins his fate to that of a woman, by whom he brings children into the world, his homosexuality may become disastrous to others as well. This is the case not only where the homosexual intercourse takes place after his marriage, but also where it occurred before that event, and where infamous blackmailing has been afterwards practised upon him in consequence.

Extra-conjugal intercourse of homosexuals.—There is the further danger that the homosexuality itself may demand its gratification. Where no reliance can be placed upon the suppressibility of the perverse desire, marriage must be most energetically opposed, as we must not in any shape or form abet adulterous homosexual relations any more than heterosexual adultery. The conjugal strifes are often aggravated by the circumstance that not only does the sensual desire require gratification, but that a true love springs up between the homosexual

partner and a third individual. The homosexual married woman has not infrequently sexual relations with a female friend. Exactly as she is depicted in *Belot's* novel, "*Mademoiselle Girand ma femme*," she refuses to have intercourse with her husband, but carries on the same with her friend. Though this homosexual intercourse takes place often enough in secret only and behind the back of the husband, it, nevertheless, happens that in some cases the friend acquires such a powerful influence over the married woman that she forces herself into the household, and this can go so far as to make the husband occupy a most lamentable position. Cases are known to me, where the common bedroom of the married couple is at the disposal of the two women-friends, and where the husband is excluded from it whenever the humour of the friend is that way inclined. Just in the same manner the homosexual husband sacrifices his wife and home in favour of his male paramour. All sorts of jealous scenes are apt to occur, and acts of violence between the parties concerned are not infrequently the result.

The married state can be disturbed just as much by the homosexuality of one of the partners, as by a woman or man, as the case may be, intervening between a sexually normal married couple; the difference is only that the anguish of the deceived partner at seeing the happiness of the marriage destroyed by a perverse relationship must be considerably greater. It is worthy of consideration that the normal partner also may in the end be driven by the perversion of the other to commit moral and physical adultery. A wife whose homosexual husband is at the utmost capable of performing cohabitation occasionally with the greatest difficulty, but who does not manifest the slightest love for his wife while practising at the same time homosexual intercourse—such a wife will naturally have no difficulty in breaking her vows, too, and, obeying a natural impulse, she will finally seek gratification outside the bonds of her marriage. As to the consequences of the unfaithfulness, if the latter is not confined to a solitary occasion only but rests upon a lasting extra-conjugal affection, as to the results on the education of the children, it is hardly necessary to say very much here. That divorce or separation is bound to come in the end is quite

evident. I have a knowledge of quite a number of cases of divorce which had their origin entirely in the homosexual intercourse of the husband or the wife, and in several of these cases I have actually myself recommended the dissolution of the marriage.

Disturbances in the married state may, however, occur also where the homosexual relations have not gone quite so far as to culminate in perverse sexual intercourse. This is often the case with sexually anæsthetic women, that is, women in whom the desire for detumescence is absent, and who do not for this reason have any intercourse with others, but who possess nevertheless homosexual proclivities. The desire to be together with the woman they love, to possess her exclusively, albeit without any sexual intercourse, involves the neglect of other interests and persons, of husband and children, just as much as does the perverse intimate cohabitation. It does, however, happen sometimes that homosexual women commence, as soon as they have become mothers, a more regulated domestic life and that they forget their female paramours to whom they had clung most passionately, in favour of their children. Though it is not exactly very happy marriages which result in such cases, maternity is, nevertheless, capable of recalling homosexual wives to a sense of their duties and to supply them with an object to which to devote their lives. Married couples are known to me who were detained from becoming divorced by motherhood exclusively, and in a few cases in which the question of divorce arose during pregnancy I have myself recommended to treat the matter dilatorily up to the time of the confinement and to await the effect of motherhood upon the homosexual wife. I do not take up the position that a dissolution of the marriage must be avoided at all costs; it is, on the contrary, sometimes the best possible course to be recommended in the interest of all the parties concerned, but on the other hand we should remember that it ought not to be brought about lightly or hastily, especially where there are important social reasons inclining the other way.

The effeminate.— It is further to be recollected that some homosexuals, men as well as women, present not only in regard to their sexual desires, but in other directions also, several

qualities which belong more to the other sex. Men with female inclinations are described as effeminate, women with male tendencies as viragoes. Such men are attracted towards other men not only by their sexual desires, but they generally feel that they do not belong to their own sex. They regret that they are considered on account of their genitals, outwardly as men. In their entire behaviour, in all their movements, they manifest female traits; they prefer to be dressed in female attire, are fond of female adornments, and vanity in respect of their outward appearance, as well as the follies of fashion and coquetry are developed in them to a remarkable degree. Of themselves they say that they "pretend" to be men. Some of them do not only shave with the greatest regularity and punctiliousness so as to retain a feminine-looking face, but employ depilatories in order to obtain better results. Some wear corsets so as to give their figures as female an appearance as possible, use women's stockings, prefer domestic arrangements such as suit ladies only, have their boudoirs, and so on. They are fond of feminine occupations, *f. i.* needle-work and the like; masculine pastimes such as smoking, drinking, sport, etc., are unknown to them. The character, too, is more like that of woman: talkativeness, moodiness, an inclination towards untruthfulness, often amounting to affected hypocrisy, are under such circumstances observed.

The virago.—Similarly some homosexual women exhibit masculine peculiarities of character, apart from the sexual desire. They have a passion for wearing men's clothes, they smoke, and not cigarettes only, but cigars as well; they prefer men's work, *f. i.* the exercise of a male occupation, to the supervision of the household arrangements. I am informed through several quite reliable sources that a number of lady-champions of women's rights are pronounced homosexuals who entertain amorous relations with female persons. Such homosexual women are fond of sport, like riding on horseback, athletics and fencing; they have no love nor the necessary adroitness for needle-work, and such like. As children already, some of them were fond of playing at soldiers or robbers rather than with dolls and other girlish playthings. Their movements resemble those of the male sex; the gait is unwomanly. They prefer to

dance with other women. Some of them—I know personally several such cases—have gone so far that on account of their disinclination to follow a feminine occupation, they have, disguised as men, done work for many years such as is generally done by male workers only; I may mention the case of a woman who has worked for many years as a stone-cutter. Some have even taken an active part in war-service.

That such men and women are little suited to enter into matrimony with individuals whose character is that of their respective sex, and that serious conflicts are sure to occur in connection with such marriages, does not admit of the slightest doubt. Men with such inclinations take more interest in the domestic arrangements than most normal women will allow, they interfere in every household detail, while on the other hand women of this kind have no understanding for, or interest in, the management of a household.

Contrary sexual sensation without homosexuality.—For the sake of completeness I have to mention yet that there are cases where men or women feel heterosexually, but where they nevertheless consider themselves as belonging generally to the other sex. Such a man likes for instance to dress as a woman, also wears corsets, ladies' underclothing, ladies' stockings, ladies' boots, yet has sexual inclinations towards women. Female charms only can bring about any processes in his genital organs. Such a woman feels sensually attracted towards men, but in other things she prefers to lead the life of a man, and she possesses male characteristics. These people are also not generally adapted for marriage, seeing that they are short of those qualities which are necessary for their position as husband or wife respectively. It also happens that they do not find full gratification in sexual intercourse; and such men are even frequently impotent in their connection with female persons. For although female qualities exercise a sexual irritation in them, real cohabitation is mostly to them an insufficient satisfaction. It is a peculiar contest which they find themselves drawn into; on the one hand they feel an attraction towards the female sex, and on the other they would like to see the position reversed. Such a man loves to play during copulation the

woman's part, and he treats in his imagination the woman, with whom he desires to have connection, as a man.

The bodily build of homosexuals.—Considering the significance possessed by the psychical qualities, it is not of very great importance whether the homosexual manifests also physical peculiarities which are distinguishing features of the other sex. There are homosexual men who are like women not only in their moral character, but who present also resemblances to the female body-build, f. i. a development of the breasts. Similarly there are homosexual women who approximate the male type, f. i. in the development of the larynx, in the deficient development of the breasts, in the male shape of the pelvis. While in man this is probably of no consequence at all from the point of view of marriage, it cannot be said that contrary physical qualities in woman are of no significance with regard to labour and lactation. I shall return to this subject later on when discussing the dangers arising to the offspring from the sexual perversion of the parents.

Pseudo-hermaphroditism and homosexuality.—There is yet another case, where female body-build in the man and male body-build in the woman constitute most serious objections against marriage. This is the case of pseudo-hermaphroditism. Although in the majority of homosexuals the genitals are normally developed, and the cases in which there is an abnormal formation are in proportion to the large number of homosexuals hardly worth mentioning, it must yet be recognised that if we proceed not from the standpoint of homosexuality but from that of pseudo-hermaphroditism, the matter is somewhat different. It is well-known that we differentiate the sexes by the fact whether there are testicles or ovaries present; the presence of testes is an indication of the male, that of ovaries of the female sex. Genuine hermaphroditism can only be existent where there are present in the same individual ovaries and testes. Whether this does occur in human beings is still open to doubt. From this true hermaphroditism we have to distinguish pseudo-hermaphroditism in which there are at the genitals some formations which pertain not to the real sex of the person in question but to the opposite sex, f. i. the external genitals

show a male character, although there are ovaries present, or they are more feminine in appearance although testicles are present. That mistakes can thereby arise at the moment of the pronouncement of the sex of new-born infants is absolutely certain. Pseudo-hermaphroditism can also acquire the greatest importance to the married state in connection with the subject of sexual desire. In pseudo-hermaphrodites not only the external genitals are more or less contrarily developed, other qualities, too, assume in them a contrary development; male hermaphrodites *f. i* exhibit female breasts. The psychical qualities, as well, take sometimes a contrary direction, especially the sexual desire. Male pseudo-hermaphrodites feel themselves therefore sexually attracted more to the male, and female more to the female sex. Now, if the external genitals were the decisive factor in the declaration of the sex, and a mistake was made at the time, one can understand that the perverse development of the sexual desire is likely to assist that mistake further still. In this way it is easy to explain how it is that in a number of cases male pseudo-hermaphrodites have married men, and female pseudo-hermaphrodites have married women. Quite apart from the fact that procreation is here out of the question, such marriages are for numerous other reasons decidedly inadmissible.

It is necessary that the medical practitioner should be acquainted with these conditions. It is hardly likely that he will ever have occasion to express an opinion on such a point before the consummation of a contemplated marriage. Should it however happen to be the case, and should he have a knowledge of the details, it is his duty to prevent that marriage. What does happen occasionally and what in fact has happened several times, is that a medical examination ascertains only after marriage whether the person in question is a man or a woman, and for this reason it is necessary that the physician should know that in such pseudo-hermaphrodites the sexual desire is also very often perversely developed, and that it forms consequently no decisive criterion for the determination of the sex.

The treatment of homosexuality I will not discuss here; there will be an opportunity to say something on the point when

considering the subject of heterosexual perversion, since the same principles apply to the treatment of both these perversions.

3. *Heterosexual perversions.*

I have so far spoken of the disturbances caused to the married state by homosexuality. Perversions which though they are directed against the opposite sex, but which are excited by abnormal means and which aim at abnormal acts, are, however, also calculated to injure married life most severely. To this class belong sadism, masochism and fetichism. I will consider these three perversions separately, but shall afterwards add a few general observations dealing comprehensively with the medico-legal dangers, the prognosis and treatment, so as to avoid repetitions.

Sadism.—Let us take sadism first. It is easy to imagine the conditions which are bound to arise if husband or wife has pronounced sadistic inclinations and is bent upon satisfying his or her sexual desire by cruelties, blows or other ill-treatment inflicted upon the other partner. Even slight degrees of sadism may assume an enormous importance, although it is hardly possible here to distinguish between the physiological and the pathological. The husband plays in sexual life a more active part and overcomes, by using even a small amount of force, the natural modesty of the wife who shrinks from giving herself away. A serious disturbance of the married state will hardly occur in consequence, provided the force employed does not exceed the amount which is welcome; but a pathological increase of this activity is sure to exercise a considerable influence. A sadistic inclination is even far more detrimental to the harmony between husband and wife than a violent temper, seeing that as a manifestation of the sexual desire it is frequently beyond self-control. Where the latter is absent, the married state of the sadist is necessarily a long chain of continued cruelty which takes different forms. One need not think in this connection of those extreme cases where the impulse to stab, to strangle or to kill takes hold of the sadist. But let us rather remember those husbands who do not induce their wives by gentle physical persuasion to

perform coitus, but force them into it by brute strength while holding them fast and overpowering their resistance. The transitions are here naturally quite gradual in character. Some cases which from the standpoint of pathology seem harmless, are far more important in causing disturbances of the married state than the severer ones. In a case known to me the husband tried before sexual intercourse to torment his wife by tickling her, while he himself became excited through her defensive movements which he rendered ineffectual by sheer force. The severe neurasthenia which attacked the wife was thus caused by this ill-treatment inflicted upon her by her husband. In other cases the husband tries to satisfy his sexual desire by beating, biting or knocking down the wife, and also by binding her. Sometimes the one partner is compelled by the other to perform all kinds of humiliating acts, such as kissing the feet, or even worse things. There are sadists for whose excitement the infliction of pain on a third person is also necessary, *f. i.* men who can find sexual irritation only if the woman torments another man, if she beats a child, kills or tortures an animal. That such means of sexual irritation are ever likely to be employed by married people is very problematical, but still the possibility is not altogether precluded; as regards the torture of animals particularly, I know of a case which presented that peculiarity. The outside public has no idea of the scenes which take place sometimes in the married life of sadists and only the medical adviser who possesses the full confidence of the family gets to know occasionally something about them, or else the lawyer, if the dissolution of the marriage becomes inevitable.

In numerous cases the sadistic act takes the place of the coitus, that is, the process intended for the procreation of children falls away, and all desire for coitus is absent. There is even in numerous men of this sort an actual impotence of copulation, or there may exist potency only with the help of sadistic imaginary pictures which enables the desired result to be obtained with the greatest difficulty only. This alone shows what an objection there is against marriage in such cases. There are of course cases where matters are different, where the sadistic act takes place simultaneously with or preparatorily to the coitus. (The

case where the sadistic act takes place after the coitus, seems to be very rare; such a case is represented by the mutilation of the body in some lustful murders.) The sadistic action taking place simultaneously with the coitus may consist in biting and pinching which surpass the physiological limit. Preparatory actions take place in some of those cases where the man finds sexual excitement in the binding or gagging of the woman, or where the woman is compelled to kill or torture some animal.

Apart from the impotence, sadism is capable of destroying the harmony between husband and wife. It also happens, that like many homosexual women, some sadistic women detest sexual intercourse. Of a married woman thus inclined, I know that she refused to have connexion ostensibly on account of complaints associated with her menstruation-periods; but these lasted rather too long, commencing 14 days before the period and terminating as a rule 14 days after it. The husband found this rather tiresome, and after several disputes the marriage was dissolved.¹

Some sadists and especially women are rendered by sadism permanently domineering and not only temporarily so while the sexual act is being exercised. The whole character reveals a corresponding quality, and a wife of this description finds satisfaction only in the permanent subjugation of her husband who becomes her slave in every respect, so that the harmony of marriage is thereby naturally disturbed. If we remember how much married life suffers merely through the capriciousness and overbearing conduct of one of the partners, we can easily judge what perturbations must be caused by the arbitrariness so intimately connected with the sexual desire. *Sacher-Masoch* who has known the sadistic woman to perfection, does not speak of her at all as a good wife. "The Wanda type is to him exclusively that of the kept mistress, that of the female animal who is capable of exciting sensual rut, but nothing else." A sadistic woman of this sort who is now divorced from her husband

¹Translator's note: It is, perhaps, as well to remind the reader that these cases refer to German conditions, and that the divorce-laws of the German Empire are more elastic than those of Great Britain, though, perhaps, not so elastic as those of some American States.

after many years of married life during which she did not admit him once to sexual intercourse, declared gleefully when asked about her matrimonial affairs, that what she liked best was to beat her husband with her riding-whip.

Sometimes sadism occurs, like other perversions, alternately with normal sexual desire or alternately with masochism. The extent of the normal desire may occasionally have to be taken into account when the question of marriage is being considered.

Masochism.—Masochism, the perversion in which gratification is sought by means of subjection *to* the other person, is also of importance to the married state. The male or female masochist takes delight in being fettered, bound, beaten, ill-treated or stabbed by the beloved associate. Frequently all sorts of symbolical acts are performed in addition: the individual in question desires to be trampled upon, to kiss the feet or boots of the other person, and this may go even so far that he finds his greatest ecstasy in the unfaithfulness of his beloved, since this appears to him to be the highest degree of his own humiliation. A simultaneous gratification of both sides can take place only if one of them is masochistically and the other sadistically inclined. Just as reciprocal gratification increases the orgasm of both partners in normal intercourse, so it is the case with masochism. The delight of one of the partners acts somewhat contagiously on the other. The great desire of the male masochist is therefore a female sadist. If one of the partners is masochistic, and the other normal, there is an absence of the mutual supplement for the gratification, though the normal woman tries to please her masochistic partner by executing the actions demanded from her. For since the woman in this case is not impelled to these actions by her sexual instinct, the process is to the masochist nothing but a surrogate, or even a farce. And even where in the female sadist the sexual life plays only a psychical part, and there are no sensual pleasures at the genital organs, yet the sadistic woman alone can procure to the masochist full gratification. In one case of which I know this went so far that a masochistic man and the sadistic woman whom he married, concluded before their marriage a regular agreement

stipulating in the most exact manner their reciprocal sexual intercourse. The agreement was in conformity with the perversion and included even the point that the husband undertook not to interfere in any way with his wife's other arrangements. The masochistic sensation of the husband reached here the degree already mentioned, namely that in which he found his delight principally in the unfaithfulness of his own wife. How such a marriage is likely to turn out, it is not very difficult to guess. Of course, it must be admitted, so as to prevent an over-estimation of this and other perversions, that in the married life of sexually normal people, too, real happiness, that is, a mutual understanding, is more often absent than the public is aware, although harmony is frequently simulated by untruths and hypocrisy, chiefly in the interest of the children.

Many masochists marry although they do not attain their great desire, namely a sadistic wife, just as normally constituted people also have as a rule to be satisfied with less than their ideal marriage. Where medical advice is sought on the point, the physician must consider whether the masochist is on account of his other qualities fit to get married or not, and an important part is played in this connection, though not with the exclusion of other factors, by the circumstance whether virility is present or absent. Like in sadism and homosexuality, there exists in some masochists a normal sexual desire in addition to the perversion. It is only towards certain female persons that they experience the perverse passion, and it may even happen that they are masochistic in the presence of prostitutes and low women only, whereas in the presence of women who are on the same mental and social level as themselves, they are guided by perfectly normal feelings. That their virility may be unimpaired towards such women who are their equals is of importance from the point of view of marriage. It also happens sometimes that the masochistic feeling is an ideal one only, a so-called platonic one, while the carnal love manifests itself in a normal manner. There may consequently in all these cases be an absence of every contra-indication to the marriage from the standpoint of virility. But whether the virility is sufficient or not, it also remains to be considered

whether the masochism is so pronounced as to exclude the possibility of suppressing it.

Sometimes the disturbance can be so considerable that one may reckon with certainty on extra-conjugal perverse intercourse or on masturbatory gratification. This is particularly likely to be the case where the person in question is deterred by his sense of shame from confessing his weakness to the wife or where the latter refuses the perverse intercourse. A high functionary had the desire to be beaten by his wife during the sexual act. As the latter would not agree to this, the two came to an understanding that the husband should periodically go to the nearest large town, there to gratify his perverse proclivity.

There are also cases where the male or female masochist has a desire to perform coitus with the other partner; the masochistic action in which the husband, for instance, allows himself to be beaten is only a preparatory one, or it takes place during the coitus, although the act is naturally rendered very difficult for mechanical reasons. Whether marriage is under such circumstances desirable is less a medical question than a matter of taste. My own opinion is that in most cases where virility can be sustained only by such adventitious aids, marriage offers very serious objections, since after all it is hardly fair to subject the other partner to such perverse actions.

With regard to the question whether the male or female masochist is otherwise adapted for marriage, it is necessary to take into consideration the entire reciprocal relationship. Masochists behave differently. Some like to be constantly under the whip of the woman, others are dominated by the perverse feeling only during intercourse, and look, after their gratification, upon their wives as true helpmates with whom they like to discuss their common interests. It is true that many experience after the act, a feeling of intense shame towards the other partner, but this may diminish in the course of time and finally disappear altogether. In other respects many masochists are very well fit for marriage. Even if some of them are eccentric others are on the other hand possessed of qualities which make them quite fit to become husbands and fathers of families. It

must, nevertheless, be admitted that some masochists change their inclinations exceedingly often; they are excited by one particular woman only so long as they cannot obtain her. As soon as their wish is realised, the excitement disappears. However, masochism, if not as yet of too pronounced a character, can be influenced favourably by married life, since habituation plays here also a very important part. The discernment of a sexually normal wife can with the help and under the direction of an experienced physician, do a great deal towards causing the disappearance of light degrees of masochism, especially if the masochist himself employs that self-discipline of which I shall speak more fully later on.

Fetichism.—Let us now consider the subject of fetichism in which the border-line between the pathological and the physiological is, perhaps, even more difficult to define than in the other sexual perversions. Under normal circumstances it may also happen that a man becomes enraptured by a certain part of the female body or by certain female qualities, and the same may occur in a woman with respect to the male sex. Some are enthusiastic about a beautiful head of hair, others dote on fair hair only, others again are charmed by beautiful teeth, one individual is fascinated by small hands, another by small feet. It can hardly be maintained that there is something pathological in such predilections. Indeed, we can go further: even in the predilection for certain objects belonging to a woman, for instance, articles of dress or dress-materials, we need not necessarily see a morbid inclination. We must take into consideration that a large part of the physical qualities of human beings is hidden beneath the clothes we wear, and that under normal circumstances, too, a certain amount of sexual sensation is in consequence associated with dress, without there being anything pathological about it. If, therefore, one individual is fond of a waist such as is shaped by the wearing of corsets, and another becomes sexually irritated by the sight of a woman dressed in furs or silks, we must be careful before we declare the one or the other a pathological subject. The sexual irritability of civilised man becomes changed through habit and, perhaps, also through hereditary forces, and it partly clings to objects which

though not belonging to the human body are associated with it. I need only mention the fondness which many women entertain for the military uniform, which is perhaps unconsciously or consciously regarded as a symbol of bravery and courage, qualities in the male sex which attract the female. If there is therefore nothing abnormal in this, we must consider further that there are still higher degrees of this physiological fetichism. The enthusiastic young lover who is happy when he can hold in his hands and kiss the neckband or glove of the girl he adores, or who finds the highest bliss in touching with his lips the letter from his lady-love, can hardly be regarded as pathological. Were we to see in such sentiments a contra-indication against marriage we should almost have to prohibit the marriage of every individual who experiences real love. What characterises these last-mentioned cases as non-pathological fetichism, is first of all the circumstance that the person in question does not love the object as an object, but because it serves to remind him of the woman he loves; besides, in these cases the fetichism does not go so far as to prevent the individual from normal sexual action. If on the other hand a man hankers after the neckband or handkerchief of any woman unknown to him whom he meets in the street, if he presses frantically to his lips the handkerchief of every possible prostitute, if he has in consequence erection or even ejaculation—in other words if the personality in question is altogether of minor importance, and an object belonging to her plays the principal rôle, the person herself being nothing more than an appendage of little consequence—it is in such a case that we can speak of pathological fetichism, or that we can regard it as an impediment to marriage. Such an impediment may also be considered to be present if the fetichism applies to a definite part of the body or to an object belonging to the woman whom the individual in question is intending to marry. It is important to remember that the sexual desire of some fetichists is not directed towards coitus but towards certain perverse actions, *f. i.* masturbation with the fetichistically loved object, and this goes in numerous cases so far that there is an actual impotentia cœundi, or that potency can be excited artificially only and with great difficulty.

If virility can be attained only by all kinds of artificial remedies, such as frictions, the use of alcohol or the most intensive imagination of the fetish, the advice to get married cannot be given. In a case known to me, intercourse is only possible if the husband all the while holds and presses in his hands his wife's handkerchief, in another if he sees before him and touches her shoes during the act. Let one imagine what must be the feelings of a married woman whom I know, with whom her fetichistic husband can practise sexual connexion only if she appears before him in full evening dress. A wife has the right to demand intercourse with her husband without having to apparel herself thus, and whether she would agree to such unreasonable conditions is so doubtful that one must certainly expect a troubled married life under the circumstances. Such cases of fetichism may in spite of an existent virility disturb severely the married state.

But when all this does not apply, if the intercourse takes place normally and the pervert gets sexually irritated only by some peculiar quality or other, f. i. the hair-fetichist by the hair of his wife, there is no necessity to raise any objections. There seems to be no reason why a marriage should be contra-indicated because an individual finds in his intended partner those very qualities which excite his sexual desire. Matrimony is on the contrary the best remedy to be recommended under such circumstances. Even in those forms of fetichism the higher degrees of which make marriage appear undesirable, it is worth considering that milder degrees are often recovered from and that the sexual life of a man may with the assistance of an intelligent wife be rendered quite normal.

The different objectionable features of the heterosexual perversion.—The importance of sadism, masochism and fetichism to the married state is a multifarious one. Each of these perversions can produce impotence or at least make intercourse so difficult of accomplishment, that a severe disturbance of the married life may be apprehended in consequence. There is the danger superadded of extra-conjugal intercourse, as the individual in question does not as a rule find within the married state the gratification corresponding to his desire; often he seeks satisfaction in masturbation. That

some avoid all extra-conjugal intercourse, either because the perverse desire is not too intense, or because their sense of propriety is particularly strong, is certainly true. But it must be considered that a large group of these sexual perverts are at the same time subject to an hyperæsthesia of the sexual desire, which urges them in the perverse direction, and that it is owing to this circumstance that the temptation to indulge in extra-conjugal perverse intercourse is very great.

But apart from that, the pervert himself and consequently his family too, are in so far in danger, as the perversion, especially in extra-conjugal intercourse, gives rise to punishable offences. We have only to mention the bodily injuries caused by the sadist, and the thefts committed by the fetichist. Quite a number of cases have already engaged the attention of law-courts in which the offence consisted of thefts of handkerchiefs and plaits of hair, actuated by a fetichistic perversion. All this is a source of peril not to the pervert only, but also to his family. Then there is the repulsiveness of many perverse actions, even if they are not punishable, f. i., the humiliation-scenes of the masochist. That masochism may also lead to punishable offences is quite imaginable. Of course, a criminal physical injury—even bodily injuries which have been perpetrated at the wish of the injured party may be punishable—is, owing to the sense of self-preservation, hardly likely to occur. But as *Krafft-Ebing* rightly points out, there is a great affinity between masochism and sexual submissiveness, which is characterised by such an unlimited subordination to the will of another, as f. i. that of one's mistress, that the submissive person is capable of committing any crime if desired to do so. *Krafft-Ebing* mentions the case of a man who on the basis of such submissiveness killed his own wife and children.

4. *Importance of prognosis and treatment.*

Prognosis.—In the cases in which the practitioner is in doubt as to whether he should give his consent to a marriage, the prognosis is often the decisive factor. Even strong pervers-

sions may be expected to disappear, perhaps, within an imaginable time, under the influence of married life, and for this reason we must take into consideration the prognosis in sadism, masochism and fetichism as we do in homosexuality. This prognosis depends upon several circumstances, principally from the hereditary predisposition and the whole physical and psychical constitution. Where there are numerous psychical abnormalities and all sorts of physical degenerative symptoms present, the prognosis is unfavourable. A man who suffers severely from mental illusions, who is subject to all sorts of anxious feelings, who is not only neuropathically but also psychopathically affected, and in whose family there have been many cases of insanity—such a case must be regarded as prognostically unfavourable. The perversion which springs from such a pathological nervous system cannot be removed with the same certainty as the perversion which has developed in an otherwise healthy organism; at least a permanent disappearance of it cannot be expected to occur so easily. The age too plays an important part. In younger people it will be easier to cause the disappearance of a perverse sensation, than if the person in question has under the constant accompaniment of the perversion reached the age of 30 or 40. Of importance is also the severity of the perverse sensation, and especially whether the normal sexual life is completely eliminated or whether there are marked traces of it.

Periodical Perversion.—Very unfavourably situated appear to me to be, on account of the danger of the hereditary predisposition as well as because of the difficulty with which a cure can be achieved, those cases where the perversion, and the corresponding perverse actions occur purely periodically. A number of these cases belong probably to epilepsy, especially those in which the actions are executed quite impulsively. I have published the case of a man who was arrested in the act of stealing a handkerchief from a lady in the street, and who experienced ejaculation when he passed the stolen handkerchief across his face. These attacks occurred periodically and then rather suddenly, and although they were not accompanied by complete loss of consciousness, there was, nevertheless, very

good reason for assuming a psychical equivalent of epilepsy. The man, a diligent artisan, was in other respects happily married; but the attack came without any premonitory signs, so that the wife could not exercise any influence upon it or prevent her husband from going out. The more suddenly the periodical perverse sensation occurs, the less favourable the influence which marriage can be expected to exercise. But the same thing may after all happen in connection with a sexual desire which is qualitatively normal, which can in feeble-minded individuals and other degenerates break out quite impulsively and lead to carnal offences, and which also shows at least in single cases the character of an epileptic attack.

Exhibitionism.—Those cases also present an unfavourable aspect in which the periodical perverse sensation, though it does not appear so suddenly, has, nevertheless, the character of an impulse urging the individual to commit a certain action. This applies *f. i.* to some cases of exhibitionism which have in recent times frequently engaged the attention of the police, the law-courts and also of the medical profession. There are men who experience now and then an impulse to exhibit their genitals in public places and to show them to female persons, and especially to little girls. Sometimes they go on with the act as far as masturbation, and sometimes the exhibition is the only thing which they do. The character of all the cases is not by any means clear yet. While we are justified in ascribing some to senile dementia and to progressive paralysis, others belong to epilepsy and a few to the hallucinations resting upon a degenerative basis. Whether the actions take place in the epileptic condition of stupor, whether they occur impulsively without loss of consciousness as a psychical equivalent of epilepsy, or whether they bear the character of the impulsive actions of degenerates, is immaterial; they are prognostically unfavourable, and marriage does not seem to exert any influence upon the disappearance of the perversion. I know of cases where husband and wife live happily together, but where, if an attack comes on, neither the great love for wife and children nor the influence of the former is capable of suppressing the seizure. The married state can have a beneficial effect only when it is

possible to recognise the attack at a very early stage, and where the wife can watch her husband so that he does not at least come into conflict with the law, either by placing him for the period of the attack in a proper institution, or by otherwise preventing him from going out. In those cases where the attacks do not announce themselves by any premonitory signs, the influence of the wife is absolutely nil.

Other sexual perversions can also occasionally appear in the form of a sudden attack; thus *Tarnowsky* has long ago pointed out the epileptic character of some homosexual acts. Sadism and fetichism may also occur periodically. The importance of periodical sexual perversions to the married state lies to a great extent in the frequently unfavourable prognosis, and especially in the fact that some of these cases must doubtlessly be attributed to epilepsy. Diagnostically it is important, particularly in view of the unfavourable prognosis of the periodical form, to distinguish between episodic attacks of perversion which may occasionally appear in even the healthiest man, and periodical perversions.

Perversion in organic disease of the brain.

—Having now become acquainted with the close relationship existing between some sexual perversions, epilepsy and degeneration, it is further necessary to point out that just as exhibitionism is occasionally a symptom of progressive paralysis or of senile dementia, so other perverse inclinations f. i. those of men towards other men, also appear sometimes as forerunners or symptoms of these two severe mental disorders. In connection with these serious cerebral diseases there may occur also other perverse propensities, f. i. a hankering after immature children. These signs of perversion often appear at a time when there are hardly any other symptoms of a cerebral affection or at least when they are unrecognisable by the lay public. Where the perversions are first noticed at an age at which such diseases of the brain occur, they must be taken into consideration. The importance of the point to the married state, whether it arises in connection with candidates for marriage or in married men, is quite evident. A searching investigation is the more necessary as the wives may possibly make use of the perverse

actions of their husbands for obtaining a divorce in their favour. I remember the case of one lady who would not at all believe that her husband was suffering from a cerebral affection. He had committed indecent acts with little girls and had on that account been placed by some friends in a lunatic asylum. The wife, who was still young, thought that this had been done only for the purpose of shielding him from legal punishment; she did not believe me either when I diagnosed that her husband was undoubtedly suffering from progressive paralysis. She wanted apparently to take advantage of the situation in order to obtain a favourable divorce. Even afterwards when the husband, broken down completely in spirit, lay paralysed, the wife thought that this was nothing but the consequence of his dissipations.

Treatment.—Of importance, of course, in considering the relations between sexual perversions and marriage, is the question whether the sufferer is willing to subject himself to treatment or not, as the prognosis often depends upon the treatment. Many a perversion can be removed by systematic treatment, which would otherwise continue unabated. The treatment is on the whole a psychical one; suggestion with or without hypnosis is here of importance. An attempt may be made to suggest away the perverse thoughts and to create by suggestions normal ones in their place. But at least just as important is the self-education. As the latter is still frequently underrated, let us consider it in a few words. All perverse sexual thoughts can, like normal thoughts, arise in a double manner, involuntarily and voluntarily. The homosexual man is suddenly seized with the perverse ideas, without having in reality done anything voluntarily to bring them about. They force themselves upon him, and he is often not able to suppress them until a gratification by *ejaculatio seminis* has taken place. In other cases, on the contrary, the perverse thoughts are purposely created. As they produce in the individual in question a strong sensual pleasure he gives himself up to them quite willingly. This psychical onanism is very important. Just as the normally sexual man imagines those acts which are agreeable to him (kissing, embracing or intercourse with a woman) so the pervert imagines what causes

him pleasure (men, masochistic and sadistic scenes, etc.). Voluntary psychical onanism also leads often to masturbation with perverse ideas. Now, experience teaches that the permanent avoidance of voluntary perverse mental representations can also bring about an enormous diminution in the involuntarily occurring perverse pictures, and this is particularly facilitated if the person in question has at the same time opportunities to let the normal charms of woman act upon him. The absolute avoidance of the voluntary production of perverse imaginary pictures, can, it is true, have a favourable effect in older individuals as well; even in them it is capable of causing a diminution in the homosexual or other perverse sensations, but a complete transformation of a pronounced perversion under the influence of self-discipline is possible almost exclusively in young persons only.

There is, of course, a great difficulty associated with this so very important question of self-discipline. There are a few perverts who regard their perverse ideas as something sinful and who try to banish them even without medical advice. To most of them, however, they bring such feelings of delight that they cannot easily do without them; they look upon these perverse ideas as an integral part of their personality, and the thought of having to give them up is so disagreeable to them that they will accept advice in that direction with very great difficulty only. The misunderstanding of many scientific works contributes towards the conception that the perversion is a something contained in the personality from early childhood, and that its elimination is impossible. It is, however, the duty of the conscientious physician to combat such exaggerated views to the best of his ability.

I have already briefly referred to the sexual intercourse with prostitutes which is sometimes recommended to perverts. Even granting its admissibility from the ethical point of view, it must still appear objectionable from the standpoint of hygiene. To the danger of infection I will refer again later on when discussing psychical impotence. Here let it be mentioned that the patient in question comes to consult the physician as a rule just because of his perverse sensation and because he suffers

from impotence as a consequence thereof. The simple advice to perform coitus with prostitutes will therefore not only be of no good, but it must often be regarded as injurious seeing that the impotence which is thus brought to light, causes the individual in question to become still more averse to the female sex. It is not coitus which must form the main object of the treatment, but such a condition of the individual in question as shall make him sexually susceptible to the normal attractions of the opposite sex. This can be achieved far oftener by a platonic companionship, especially if the above-mentioned self-discipline and other remedies are happily applied at the same time. An intelligent female person, matrimonially united with the patient or not, who attracts him to her by some quality or other, can do much towards establishing a normal heterosexuality, f. i. by utilising her normal charms as much as possible during her social or platonic companionship with the individual in question, where he is fetichistically or sadistically inclined.

Incidentally I only wish to mention that in the case of sexual perversion in female persons, the advice to indulge in extra-conjugal sexual intercourse is absolutely out of the question. That the treatment to be adopted must take into consideration the entire constitution, and that the physician must recommend all the appropriate measures to be taken, is self-evident.

5. *Sexual inclination towards children and animals.*

Sexual inclination towards children.—So as not to make the description too tedious, I have purposely refrained from discussing some sexual perversions. I have f. i. left out of consideration the inclination to children and only mentioned it casually when discussing senile dementia and the general paralysis of the insane, and also when I dealt with the homosexual inclination which is directed to unripe boys. But there are also cases in which only immature girls, and others in which sometimes immature girls and sometimes immature boys, form the object of the sexual desire. But whereas some of these unnatural offences against children are certainly committed by profligates, we see that they rest sometimes on diseased condi-

tions. Apart from senile dementia and progressive paralysis, epilepsy and feeble-mindedness also come into question. There exists, however, in certain individuals who do not suffer from any of these diseases an original perversion which is directed towards children. *Krafft-Ebing* designates it as *pædophilia erotica*. There takes place in connection with it all sorts of obscene contact with the children, and we have no right to regard the individual in question as a libertine. The whole subject is as yet little understood. We may, however, take it as probable that an exclusive inclination to children with the exclusion of the normal desire is always a sign of serious taint. We do not know what influence marriage may exercise in this connection. That this influence could in itself be an unfavourable one, is hardly to be expected. The circumstance that an acquired inclination appears comparatively often in persons who are much in the company of children, f. i. teachers, would seem to suggest *a priori* that the constant cohabitation with an adult female person ought to diminish the desire for immature children. We have, however, hardly any positive material in this direction. It must, in any case, be remembered that the great danger which exists from the point of view of the criminal law—unnatural offences against children are very severely punished in all civilised countries—subjects the wife to the risk of seeing her husband come into conflict with that law. Be that as it may, *Krafft-Ebing's* opinion that such men belong to a sanatorium, is from the theoretical standpoint the best, though it cannot unfortunately be carried out in practice in many cases. My experience tells me that a cure of the inclination to children does occur.

Sexual inclination towards animals.—There is finally to be mentioned the sexual affection for animals which cannot, however, always be distinguished from the non-sexual. There is, of course, no sexual affection in those cases which consist of peripheral titillation such as is taught for instance by some women to small dogs; but such real sexual inclination may develop at the period of the undifferentiated sexual desire and manifest itself by an impulse to fondle dogs, cats, horses, canaries or other domestic animals. It occurs also at later periods

of life and seems to possess in women sometimes a platonic character. Some women who are in the habit of visiting frequently the monkey-houses of Zoological gardens and who are well-known to some of the more observant keepers, belong, perhaps, to this category. In a few of the cases there is some evidence of a sexual basis to the fondness for animals, though of one, perhaps, without a sensual character. Of course, not every pronounced love of animals, even if it appears very much exaggerated and eccentric, must be declared as something sexual; this would be just as wrong as the attribution of every act of cruelty to sadism, to which some individuals who have heard or read something on the subject without understanding it, feel a certain inclination. But sexual fondness for animals does occur, and in both sexes, too. In man it shows itself occasionally in a desire for sexual gratification with animals. For the present, however, it is hardly possible to draw a sharp line between vice and disease, especially as it is very frequently only an hyperæsthesia of the sexual desire which is the cause of sexual acts on animals. Similarly the importance of sexual fondness for animals to the married state is hardly as yet understood. The exaggerated inclination of women towards animals suggests the following reflections: Whether we assume a sexual basis or not, it appears that it is observed particularly in elderly unmarried women or in whimsical females. At all events it is permissible to anticipate from married life in such cases a favourable rather than an unfavourable effect. As regards men it must be recollected that the desire to perform sexual acts on or with animals is evidence of a serious degenerative character, and this gives rise to all those objections against marriage which I have already discussed when dealing with the degeneration of other sexual perversions, or which I will discuss yet from the point of view of their importance to the offspring. Where marriage is thought of, it is, of course, necessary in all cases to consider the virility towards women.

6. *Psychical impotence.*

The causes of psychical impotence.—We have already several times alluded above to cases in which the virile

power is absent or deficient. They referred to perverts in whom normal female charms are not capable of producing erection and ejaculation. As the impotence is in these cases of a psychical character, they belong strictly speaking to the category of psychical impotences, but it is not usual to include the sexual perversions among the latter, because it is not the impotence which is their characteristic feature, although impotence frequently accompanies the perversions. Similarly the numerous cases of neurasthenic impotence must also be separated from psychical impotence, for instance those in which mental overexertion produces a general neurasthenia of which impotence is one of the symptoms. As psychical impotence in the narrower sense we understand those cases where the sexual desire is normal, but where the virility is absent in immediate consequence of psychical processes acting inhibitorily. There is usually in these cases a want of erection and ejaculation. In some of them, however, the erection alone is absent, while ejaculation takes place nevertheless. The psychical processes which lead to impotence can be of different kinds, but they are generally based upon emotions. Among these the principal one is the fear of impotence. The more the individual in question desires to be virile the stronger the inhibitory representation which prevents the erection. Most of the patients belonging to this group are neurasthenics, but not all. Many of them were in the habit of indulging in all sorts of sexual excesses, and especially in masturbation, and are now afraid of the consequences which they grossly exaggerate. That the dread of being unable to effect the defloration plays a particularly important part need hardly be mentioned. There are also other emotions which produce psychical impotence. This is *f. i.* observed in husbands who look upon every act associated with the sexual organs as a profanation of love. Some of them have led a chaste life, others again, are no novices in matters sexual. Their relations to the female sex have, however, always been of a sensual nature; now they experience for the first time a real and enthusiastic love and are at great pains to dissociate it from all sensual thoughts so as to preserve it in all its purity. Such feelings are capable of inhibiting the erection and of thus causing impotence. The fear of im-

pregnating the wife may also lead to impotence. There are further other psychical processes besides the emotions which can act inhibitorily, *f. i.* the concentration of the whole mind upon one particular subject. I remember the case of a scholar who was for a long time pursued by a scientific problem as by an hallucination, and who was during the whole of that period impotent and unable to gratify his wife's desire for coitus.

In considering psychical impotence with respect to marriage and the married state, it is, perhaps, best to combine our remarks with a typical and very frequent case.

When may a psychically impotent man marry?—A man who has had occasional intercourse with prostitutes is seized with a fear of impotence shortly before his engagement or marriage. To test his virility he visits a prostitute and finds as a matter of fact that he is impotent. He repeats the attempt several times and always with the same want of success. The virility fails him exactly because he is afraid of his impotence. He thereupon consults his medical adviser and asks him whether he may marry.

What should the attitude of the physician be?—He must take into consideration the whole of the circumstances and the former life of the patient. If the latter is otherwise in good health, if he manifests no signs of severe neurasthenia or psychopathia, if it appears that he has not weakened his virile power by excessive masturbation, and that he often experiences powerful erection, for instance in the morning, or if erection takes place under normal heterosexual representations, the physician need not be afraid to give his consent to the projected marriage. There must, of course, be a further preliminary condition, namely that there exists a pronounced sexual inclination towards the future wife. Great importance must be attached to this; the individuality of the taste and of the inclination must be taken into consideration, since no normal man must necessarily be potent in the presence of every woman. Whether a sexual inclination does exist, on this point every man must, of course, feel for himself; he must know whether he feels attracted to the girl of his choice, whether he would like to touch her, to kiss her, or whether he takes a still higher interest in her. The

occurrence of erection when he embraces and kisses her and a feeling at the genitals which is difficult to describe, can supply a certain indication whether a sexual inclination does exist, but they are no positive proof of virility; some have an erection when they are quietly sitting near and touching their fiancée, while attempts at coitus produce no erection. For all that, erection and the presence of the above-mentioned feeling at the genitals are of importance as evidence of the existence of a sexual inclination.

In contrast to the cases indicated there are others where the physician must not recommend marriage. Where there has previously been much masturbation, where the psychical impotence accompanies a severe neurasthenia or where it assumes the form of an illusion which dominates the patient, and if marked erections are never observed, it is generally better to dissuade from marriage than to acquiesce in the taking of such a risky step. In view of the great misfortune which incurable impotence may cause to married life it is imperative to be extremely careful about the diagnosis; and what is particularly important is to establish whether the impotence is really one of a psychical character only. As a result of the study of hypnotism and suggestion the psychical effects on the functions of the body have recently acquired a greater importance than was formerly attached to them; and just for this reason it is necessary to guard against an overestimation of the psychical influences. There is always a risk in the sort of cases with which we are here concerned that a psychical cause will be accepted where there are others at work. We have not only to think that diabetes, tabes and some intoxications can equally produce impotence, but we must also distinguish strictly between psychical impotence and neurasthenic impotence which is as a rule connected with masturbation and other sexual excesses. Though there are a few authors who refuse to admit the existence of a psychical impotence altogether, regarding it merely as a form of neurasthenia, there are no doubt cases where the psychical factor of the impotence is of such prominence that we can often quite easily separate such an impotence from the neurasthenic, especially that form which is associated with sexual excesses. Such a

separation is the more important as the purely psychical impotence is under the above-mentioned conditions no material contra-indication against the contraction of a marriage, while neurasthenic impotence causes in this respect the greatest apprehensions.

Treatment of psychical impotence.—It is not sufficient when a medical man gives his consent to the marriage of a psychically impotent individual to rest contented with that. The most important thing is to institute at the same time the proper treatment. Psycho-therapeutics, advice and suggestion play here the main part. The patient must be instructed on the subject of married life and particularly on the moral effects which the occupation of a common bedroom with her husband is alone capable of producing on the wife, since the dread of making himself ridiculous in the first night is generally exaggerated. The chaste reserve which in spite of very frequent meetings between an engaged couple precedes the marriage ceremony is immediately after this event followed by an encounter which is exceedingly painful and strange to both sides, especially to the wife, and which is bound to tax to the utmost their sense of modesty. This is usually so much the case in young brides that they have hardly ever either the time or the inclination to ponder over their husband's want of success. For this reason there is no occasion for any man to be afraid of making himself ridiculous.

It is further to be remembered that the desire for coitus is in woman as a rule not so great as many men believe. Unmarried men are usually in the habit of boasting of their conquests among the female sex; one likes to brag to the other about the eagerness with which his mistress awaits his arrival, and how ardently she gives herself up to him, and so on. In this way there arises especially in men whose virility is in some way impaired an exaggeration not only of what a man is capable of, but also of what women expect from men. Though it cannot be said that sexual anæsthesia is the rule with women, there is nevertheless, as already mentioned, a sexual frigidity present in many of them. We may even admit that while some women await with a curious interest the first performance of the mysterious act the frigidity

sets in later on. But even this curiosity is so much counteracted by the feeling of shyness that no husband need be much afraid of it, and candidates for marriage have no reason to anticipate that they will be required by their wives to show any extraordinary prowess either on the first night or afterwards. The more one succeeds in reassuring the patient on this point, the more it is permissible to allow him to run the matrimonial risk, as the probability is very great that if not in the first night, he will most assuredly later on overcome his unfounded fears and attain the desired result. It is just in these cases that the physician can exercise to the best advantage his psycho-therapeutic qualifications. The effect can be heightened by hypnotic suggestion, but even without it it will nearly always be possible for an experienced doctor to succeed in his object. I should like to call attention to one more point: the words of the physician will as a rule lose their effect on the patient if they are not occasionally repeated. I consider it, therefore, advisable to recommend to the patient to live for some time after his marriage in a place where he can always obtain the services of a psycho-therapeutically experienced doctor who is familiar with the subject of psychical impotence. These services may become indispensable after the first unsuccessful attempts so as to prevent the idea of impotence from taking more and more permanent root; otherwise it is not at all impossible for the impotence to become more or less established. If the individual in question was unsuccessful in the first night, it is as well to inform him that the defloration very often does not take place at the first attempt.

Absurdity of the advice to have intercourse with prostitutes.—Some come to the doctor without having tried prostitutes first. It is nearly always wrong to recommend such patients, as is frequently done, to have intercourse with a prostitute before the consummation of marriage. The danger of infection alone, which in the case of a marriage-candidate is of considerably greater significance, ought to render such advice impossible. The application of a preservative is in the case of this class of patients particularly difficult of accomplishment, for if such preparations must be made previous to coitus the effect is more likely to be an aggravation of the psychi-

cal impotence: the erection which should be utilised for the quick introduction of the member, becomes extinct at the moment the preservative is applied. But apart from the danger of infection, virility in the presence of a prostitute who has, perhaps, applied all the artificial tricks of which a woman of her class is capable in order to enhance the sexual passion of her visitor, is by no means a proof that he would exhibit virility in the presence of a chaste woman. Neither, on the other hand, does impotence in the presence of a prostitute who, perhaps, disgusts one by her shameless manners and obscene language prove that the same individual would be equally impotent in the arms of a woman for whom he experiences a profound moral attachment. It is a very serious matter to send some one with normal sexual feelings and who has never had intercourse before, to a prostitute on the eve of his marriage—even though we ignore for the moment the unethical character of such advice. A gentleman who had been chaste all his life, and had never been near a woman, became engaged. He loved his intended bride most passionately. One day a friend of his recommended him to make sure before the wedding that he was potent as he could not otherwise tell. So he visited a prostitute, when he was absolutely unsuccessful. He repeated this experiment several times, always with the same ill-result. In his great anxiety he consulted his medical adviser, who referred him to me. He had never practised masturbation, powerful erections showed themselves occasionally, there was no organic disease of any description, and not even neurasthenia was present. But he detested prostitutes. As there seemed to be no contra-indication against the projected marriage, I recommended him to go on with it and he was very soon able to satisfy himself as to his perfect virility. I am decidedly opposed to the idea of drawing any conclusions with regard to virility in the married state from the virility manifested in the presence of prostitutes.

The opposite of this also takes place, namely that men who have before their marriage shown themselves potent in their intercourse with prostitutes and other females, suddenly find themselves impotent on the first night and also afterwards. This temporary impotence is, however, fully explained by the great psy-

chical irritation. Why, even in some Don Juans impotence always sets in when they are in the presence of a new conquest, be it the wife or some other charmer. The same thing may happen, however, to the steadiest bourgeois; in such cases the impotence disappears as a rule after a few days.

Co-operation of the wife.—Medical men are just as frequently consulted after marriage on account of psychical impotence as before it. Even after many years of married life psychical impotence may make its appearance, necessitating medical advice. To some extent the action of the physician in such cases is simpler. In the first instance the difficult duty of giving advice in favour of or against a contemplated marriage does not devolve upon him, and he can, besides, reckon as a rule upon the co-operation of the wife in the treatment of these cases of psychical impotence; this, of course, on the supposition that the wife really loves her husband and that she does not wish to exploit his psychical impotence for the purpose of obtaining a divorce from him. It is from the standpoint of therapeutics absolutely indispensable that the wife should in this matter take up an entirely unprejudiced position towards her husband, that she should not urge him to perform sexual intercourse, and that, if she does so, to follow strictly the injunctions of the attending medical man.

Prohibition of intercourse.—It is a common experience that the prohibition of intercourse conduces in relatively very many cases of the kind to a re-establishment of the virility, as in this way the fear of impotence is excluded and the husband regains his self-confidence. Sometimes the occupation of separate bedrooms, or even the temporary parting of husband and wife, appears a desirable proceeding; such a course will, however, but rarely be necessary, and in newly-married people it is best not to have recourse to it both for medical and politic reasons. A separation for a time or the occupation of different bedrooms would appear to be indicated chiefly in those cases where a certain coldness in the affection has sprung up on the part of one of the spouses, and where it is hoped by the separation to rekindle the attraction which woman exercises over man. In ordinary psychical impotence such separation is as a rule not

desirable, for the reason, principally, that the first erections in the husband which occur either spontaneously or in consequence of caresses, can be made use of for the performance of coitus, whereas this advantage is lost if the husband and wife are separated from one another. In such a case the erection will very likely often become extinct by the time the husband has traversed the distance which separates him from the wife. It cannot, however, be denied that in many instances this arrangement can be productive of good results.

At any rate the wife must be patient and wait resignedly until the husband requests the intercourse of his own accord. Such a co-operation can naturally be expected more easily from a wife who has been married for some time than from one newly-married, as she will then sooner make up her mind to speak to her doctor about the matter and he will consequently be able to rely upon her assistance. At all events the doctor must not in such things be too prudish; a single conversation even with a very young wife can sometimes act like a charm, if the vigility of the husband depends upon the behaviour of the wife. I recollect the case of a young couple who consulted me when on their honeymoon, a fortnight after their wedding. They had married each other for love. The husband had in his pre-connubial intercourse always been potent, and now as a married man he had suddenly become impotent. He was greatly agitated over the matter especially as his young wife, who was by no means over-shy, had made one or two disparaging remarks. A few words which I addressed to the young lady who had accompanied her husband and had been waiting for him in the waiting-room, to the effect that her conduct was likely to endanger her married life, made her realise the situation and had the effect of producing a normal state of affairs within a very few days. The fear of being incapable is the greater, the more the impotent individual is afraid of losing the estimation of his wife. Generally speaking, I am of the opinion that an interchange of words between the physician and the wife—unless he occupies the position of family attendant or a similar position of trust—should, apart from exceptional cases, never take place without the knowledge of the husband. As an additional remedy the

advice is worth mentioning that the erection which occurs very frequently first thing in the morning, should be taken advantage of for the purpose of the first attempt at coitus where there is psychical impotence. This succeeds very often without any difficulty; the husband regains his courage, and that is the first preliminary condition. That suggestion may with advantage be used for the removal of psychical impotence is well-known.

Physical and chemical remedies.—It is understood that in the treatment of psychical impotence either before or after marriage all those physical and chemical remedies must be applied from which benefit may be expected. Hydro-therapeutic applications and electricity achieve sometimes a great deal of good, though it is not impossible that the psychical element plays here the principal part. The faradic current is especially recommended in these cases in order to produce erections which inspire the patient with confidence. Of pharmaceutical remedies, cantharides has for a long time enjoyed a reputation as an aphrodisiac. In doses which can really help to cause an erection it is hardly safe to administer the drug on account of the danger to which it subjects the kidneys. There is, however, no harm in giving it in small doses, as by doing so the patient is under the impression that he is taking a powerful aphrodisiac of whose reputation he has, perhaps, heard, while his kidneys are not at the same time in any way injured. The preparation known as yohimbin which has recently been introduced, I have often recommended, but I have never obtained any results from it which could not be attributed to suggestion, and this we may say not only with regard to psychical impotence but also with regard to neurasthenic impotence and the impotence which accompanies the sexual perversions. I have never seen a satisfactory result which could not have been achieved also by the employment of hydrochloric acid or of any other indifferent remedy. Still, it is advisable to prescribe yohimbin to those patients who have confidence in it, if it is only for psycho-therapeutic reasons. There is no need for me to enter here into a discussion of the treatment of that form of psychical impotence which rests not upon the fear of impotence but upon a too intensive mental diversion, upon the dread of the profanation of woman or upon the fear

that impregnation will ensue. Such treatment is obvious from what has been said above, and especially as regards the last mentioned cases a great deal depends upon habituation.

7. *Consideration of the offspring.*

Sexual perversion without degeneration.—

I come now to the question whether regard for the offspring should deter the sexual pervert from marrying. *Krafft-Ebing* and others look upon sexual perversions as a symptom of a condition of degeneration, and there can be no doubt that a degenerate procreates very often diseased descendants. We must, however, remember that even most minute investigation into the family-history of sexual perverts does not sometimes permit any definite conclusions pointing to an hereditary predisposition, unless we are prepared to extend the latter far beyond the limits of reasonableness. As proof we might mention a few prominent persons who though admittedly victims of sexual perversion, cannot, nevertheless, be regarded as degenerates. It is true that the perversion was sometimes with them temporary only, as f. i. in *Goethe* whose poem "Lilly's park" describes in a masterly manner the sensual delights of one's own humiliations, and *Goethe* is supposed to give expression to his personal experiences more than any other poet. There are also several other proofs of episodic sexual perversion to be found in *Goethe*, and yet we do not look upon him as a degenerate individual. Attention has recently been called to *Grillparzer's* homosexuality which had more than a merely episodic character. But neither has *Grillparzer*, hitherto been supposed to have been a degenerate. The opponents of the degeneration-theory point out further that the ancient Greeks whose homosexual passion was almost one of their national customs were surely anything but degenerate, and there are instances of homosexual phenomena among uncivilised nations to whom the word "degeneration" is not even applicable. We must at any rate admit that there are perverts in whom no degeneration can be demonstrated. Of course, if we are inclined to look upon the occasional migraine of a consanguineous relation as a severe hereditary taint, we should not

have much difficulty in proving almost everybody as a degenerate. We should then be able to establish degeneration not only among the well-to-do classes, but also among the poorer people, not only in the large towns, but also in the smaller ones and even in the country, not only in perverts, but almost in all of us no matter whether there is sexual abnormality present or not. There can consequently be no doubt that there are cases of sexual perversion, and not only episodic ones, without any degeneration. If we bear this in mind we shall be able to look upon perversion as something which is in itself hardly sufficient to stamp the individual in question as hereditarily affected, as one who is a source of danger to his descendants.

It is true that *Krafft-Ebing* has pointed out cases where the perversion was seen in father and son, and that he has on this basis, though with some reservation, evolved the theory that the perversion of the ascendant develops, perhaps, in the descendant in a progressive manner. If we had to expect from the perversion of the parents an increase of the perversion in the offspring, we should certainly have to regard the perversion of the parents as a contra-indication against marriage. The material pointing that way is, however, insufficient, and we have not the right to anticipate with anything like probability that the sexual perversion of the parents will repeat itself in the children.

On theoretical considerations we could only rely if they were conclusive; but even this is not the case. Many qualities are inherited within the same sex, f. i. the growth of a beard by the male children, or the development of the breasts by the female children. We must, therefore, ask ourselves whether in view of this circumstance homosexuality is something which possesses hereditarily predisposing qualities. Homosexuality is after all only the clinical name of a psychical phenomenon: homosexuality of man is the capacity of man to become sexually irritated by the qualities of man. If such a man generates children, the capacity to become sexually irritated by the qualities of man will, perhaps, pass to his daughters; and vice-versa, it might not be impossible in the case of a heterosexual father and a heterosexual mother for the capacity of the heterosexual father to become sexually irritated by woman, to be transmitted to the

female children. If we wish to presume on the strength of theoretical considerations that homosexuality presents the danger of hereditary transmission, it would have to be proved first that as a matter of fact the capacity of becoming sexually irritated by man is transmitted from the homosexual father to his son. This would be conclusive in favour of the prohibition of marriage.

Sexual perversion in tainted individuals.—

But if sexual perversion cannot be regarded unconditionally as something with an hereditary taint, the suspicion must, nevertheless, arise that where it is present, an abnormal constitution does exist which might prove calamitous to the progeny. This, because we know with absolute certainty that very often sexual perversions are present simultaneously with neuropathic and psychopathic symptoms either in the pervert himself or among his consanguineous relations. Idiocy and other mental disorders, epilepsy and delusions, alcoholism and hysteria, suicide, all sorts of eccentricities, cruelty and the like are not infrequently observed in the consanguineous relatives of the pervert, and he himself is apart from his perverse sensations very often of a morbid nature.

For this reason it is necessary where hereditary predisposition is present, to ascertain its extent in order to be able to advise with regard to the contraction of marriage. The more signs there are of hereditary predisposition either in the pervert himself or among his blood relations, the more correct it is to prohibit his marriage. It must, however, also be taken into consideration how numerous the relations in question are. If the pervert has eight brothers and sisters, if both parents also have many brothers and sisters and these have equally large families, a single case of insanity will not count as much as in a case where the parents have no brothers and sisters, and the only brother of the pervert is a victim of insanity. This point is often overlooked, but it plays a very great part if we wish to understand the real value of the hereditary predisposition. Nor could we find a contra-indication against marriage, say, in an occasional headache of the pervert's mother or in an occasional outburst of violent temper on the part of his father. The number of affections regarded as hereditary has recently grown so much

that with a little latitude one might be able to prove an inherited taint in almost anybody. There are, however, on the other hand cases where the danger to the eventual progeny is so great that it is absolutely necessary to dissuade against procreation, even if the pervert himself is apart from his perversion the subject of no other morbid phenomena and the latter are manifest only among his blood relations.

Consanguinity.—The question is also of importance whether marriage should be permitted among blood relatives. Opinion is still divided as to whether consanguinity as such represents an hereditarily predisposing factor. But on one point there is a general consensus, namely that if blood relations wish to marry one another and severe mental and nervous diseases have occurred in their family, the danger of hereditary taint in the eventual offspring is particularly great, and for that reason it will be necessary to prohibit the marriage in such a case. This necessity is greater still if the hereditarily affected pervert intends to marry a girl who is also hereditarily tainted, or vice-versa, if a perverse girl desires to get married to a man who, though sexually normal, is descended from a hereditarily tainted family.

The probability of hereditary predisposition.—Generally speaking, it is hardly ever possible to foretell with certainty whether diseased or morbidly predisposed children will be the outcome of any one marriage. Although hereditary predisposition plays a very important part, we know that healthy parents can procreate diseased children and diseased parents healthy children even though the disease of the parents is one which is reckoned among the hereditary ones. We can only offer a prognosis with regard to the eventual offspring with a certain amount of probability and decide accordingly in favour of or against a contemplated marriage. But when the prohibition of a marriage appears indicated out of regard for the future offspring it must be pronounced with all energy and determination. I go so far as to maintain that a medical man has a right to refuse treatment to a patient so situated where such treatment is a necessary preliminary to the marriage. Let us take the following case: In a homosexual belonging to an ancient noble fam-

ily there is reason to anticipate with very great probability the procreation of severely afflicted children. The man has, nevertheless, the wish to marry, and the employment of preservatives cannot be expected as he is anxious to perpetuate his race. Surely nobody can blame the doctor if he refuses to assist him in procreating children; at least one can hardly say that the doctor is wrong in declining to treat under such circumstances a case of perversion accompanied by impotence. The individual in question should be reminded of the reproaches which his children will eventually heap upon his head. I know cases where children regard it as an unpardonable wrong on the part of their parents that they got married at all in spite of their predisposition to disease, and notwithstanding their epilepsy and many other diseases among their blood relations. Their parents, they argue, must have known what would be the inheritance of their future children, and that severe degeneration would be their lot from the moment of their birth. To a young lady, a patient of mine, given to all sorts of perverse inclinations who frequently behaved outrageously towards her parents, I recommended amid reproaches to show a little more gratitude to her father and mother who were sacrificing everything for her sake and for the sake of her health. She replied as follows: "It is said so often that children should be grateful to their parents for what they do for them, but I know of no reason why I should be grateful. My parents ought, in view of the severe disorders which have occurred in the family, to have renounced the idea of procreating any children, and they have no reason to expect any gratitude from a being which they produced when gratifying their momentary pleasure, and which was bound to be the victim of disease all through its life."

Sometimes it is, perhaps, of advantage to appeal to the egoism of the individual in question, if nothing else will induce him to give up the idea of marriage. It may be a good thing to point out to him what troubles and anxiety he is sure to have with his eventual afflicted children, apart from the severe remorse which he will experience. No matter how much can be expected from a good education it is not possible even for the best of tutors to transform a diseased brain into a healthy one.

Degeneration as nature's healing-process.—

It is true that the objection is sometimes advanced that degeneration, and consequently sexual perversion also, if it is looked at in the light of a degeneration, favours a natural healing process. *Morel's* teaching was that degeneration is meant by a gradual increase through three or four generations, to lead to sterility and finally to the death of the race. But the physician has nothing to do with the question whether the race will become extinct after four generations. Such speculations do not come within the domain of the medical man whose sole duty is to advise his patients to the best of his ability. What is of interest to him is the question: How will the marriage turn out, what will be the constitution of the future children? So many other influences act upon the third and fourth generations that even if we attach very great importance to the views of *Morel* and others respecting the degeneration of future generations, we can afford to ignore them almost altogether from the standpoint of practical medicine.

Male shape of body in females.—There are also other elements playing an important part with regard to the offspring, and though this may not very frequently be the case it is as well to mention it for the sake of dealing completely with the subject. I have already said that in a few cases not only the psychical qualities of the homosexual correspond to those of the opposite sex, but that the physical formation of the body also shows an approach to that other sex. Thus the shape of the breast, of the skeleton and especially that of the pelvis in a homosexual woman, may assume a male character. As the female pelvis is under normal circumstances wider than the male, a condition necessary to facilitate labour, it is important to remember that a male-shaped pelvis in a woman may render parturition very difficult; nor can we entirely ignore the fact that a deficient development of the mammary gland may prove an obstacle to the performance of the function of lactation. Nevertheless, this factor must not have any exaggerated importance attached to it for the purpose of judging homosexuality. One has rather to think that many other women also neglect this duty of lactation, that in fact, so-called "society-ladies" consider it

as something degrading, and that they do not see anything indecent in hiring a wet-nurse and thus in very often depriving some other poor child of its mother. We must further recollect that in the opinion of some the development of the female breast is at least in certain regions altogether retrogressive, and it is consequently unnecessary to attribute great importance to this point in connection with homosexual women.

But what we must take into consideration is that the sexual pervert is sometimes for other reasons also not exactly a suitable person to bring up children. This is particularly true with regard to some homosexual women who incline to all sorts of eccentricities which render them above all unfit to undertake the education of the young.

Summary.—I have in the preceding pages discussed the relations between the married state on the one hand and sexual perversion and psychical impotence on the other, and pointed out the principal contra-indications against marriage. This step must be dissuaded from not only if impotence or insufficient virility on the part of the husband is to be expected, but also if the perversion is likely to disturb the harmony between the spouses to such an extent that a happy married life will hardly result in consequence. The sexual perversion of one of the married partners can injure the relations between both of them in spite of existing virility, just as severely or even more so than castration or impotence caused by organic troubles. Though these latter causes render the procreation of children and (in the case of castration of the husband, principally) sexual intercourse impossible, the psychical conditions of an harmonious married life may continue undiminished, whereas they are absent in numerous sexual perversions, f. i. in homosexuality and sadism; the danger of conjugal infidelity also is in these cases exceedingly great. A marriage must rest upon a moral basis. If the sexual intercourse cannot be performed in a manner satisfactory to the inner desire of both husband and wife, and if the coitus necessary for the procreation of the children is exercised after great reluctance only, a preliminary essential of married life is wanting, quite apart from the fact that sexual intercourse carried out in a way not commensurate with the

desire is bound to have debilitating and injurious effects upon the health. Marriage is also to be prohibited if, where virility is present, the probability points to a diseased offspring. There is, however, no need for paying any regard to the latter if the spouses decide from the commencement to make use of anti-conceptional remedies, or if one of them is sterile. But this is hardly likely to be the case, and preventative intercourse cannot be regarded as an ideal beginning of married life.

In many cases the consent to the marriage must depend on the whole, as I have already said, upon whether an improvement of the sexual perversion can be expected from the married state as such, or during married life under the influence of medical treatment. In many of these cases the medical man is, of course, perfectly justified in considering the question whether medical treatment is to be recommended at all with a view to making marriage possible. It may very well happen that a marriage can be declared permissible after successful treatment. Then there may be cases of patients who have married contrary to medical advice or without consulting a doctor at all, and who are now desirous of undergoing treatment. Under such circumstances the physician is, of course, entitled to make an attempt to cure his patient, if the probability is not so great as to amount almost to a certainty that the offspring will be of a highly degenerate nature. Very often, however, medical treatment is quite hopeless or futile, and then there is only one remedy to be recommended: prohibition of the marriage or dissolution of the same, as the case may be.

Unimportance of episodic perversion.—When consulted, the doctor should avoid being dogmatic. After all, medical reasons against marriage and sexually perverse feelings can be found even in the most normal of men. If one inquires minutely into the sexual life of any given person, male or female, signs of perversion, for instance a tendency to fetichism, will very often be detected. One need not attribute any influence, as regards marriage, to every temporary perversion, but then one must also be careful not to mistake for an episodic perverse sensation a periodical one which, as we have seen, is often of

a serious character. We must remember that nature never proceeds by leaps and bounds. Just as sanity passes into insanity gradually, just as neurasthenia and hysteria are removed from a normal nervous system by numerous intermediate stages, so it is with the demarcation between the perverse sexual desire and the normal.

Even in the presence of a continued duration of a slight perversion that has not produced impotence, the doctor must bear in mind that most marriages between individuals whose sexual sensation is normal, are also not in every respect harmonious. Both sides must accommodate themselves to each other, and it is assumed that this imparts to marriage a high ethical value. Though many a one looks to marriage for his ideal, the unprejudiced observer must admit that it is very rarely, perhaps never, found. Things are in ordinary life totally different than depicted by novel writers, and disappointments are not unknown in every marriage. We must remember that normal men and normal women also do not have themselves anatomically examined before marriage and that they encounter, perhaps, bodies entirely different to what they expected. For this reason I have not attached any very great value to whether the physical qualities of the homosexual man or woman appeal to the sympathy of the other partner or not. That the character and other psychical peculiarities of each spouse also do not become known to the other until after the marriage, is such a common experience, that we hardly need to say much about it. I only just wanted to mention it so as to point out that one must not expect from sexual perverses more than from those who are sexually normal. If there are people who agitate against the whole method of modern marriages, and especially against the absence of a previous thorough acquaintance between the man and the woman, if they endeavour to introduce a reform in this respect, this can undoubtedly do nothing but good; but as regards the question with which we are dealing, namely the significance of sexual perversion to the married state, these endeavours have nothing of importance to do with it, because we have to be guided not by the circumstances of the future State, but by those of the present day.

Unimportance of the non-differentiated sexual desire.—I have already mentioned that certain temporary perverse sensations must not be exaggerated in their importance to the married state. But devoid of all significance is, as I wish to point out again, the perverse sensation which is present in numerous individuals at the time puberty begins to develop, and which I have described as non-differentiated sexual desire. Until far in the twenties, that is up to an age which in the female sex is much above the average marriageable age, and in the male sex about corresponding with the latter, this non-differentiated desire may continue to be present. But as even at that age it may be expected to become differentiated, or as the differentiation may be hastened by marriage, there is no cause to look upon the longer duration of the non-differentiation of the sexual desire as an obstacle to marriage from this point of view. It is, of course, well to consider whether it is merely a question of a longer continuation of the non-differentiated sexual desire or of a permanent perversion and especially also of a permanent psycho-sexual hermaphroditism. The distinction of a psycho-sexual hermaphroditism and of homosexuality from the prolonged non-differentiation of the sexual desire, may, it is true, cause great difficulties, and one must be guided by the whole of the circumstances of the case. What is, however, necessary above everything is, that if the point is doubtful and one hesitates as to whether to grant yet the consent to marriage, the individual in question should observe himself carefully. If this self-observation reveals a slow disappearance of the perverse sensation and a gradual development of the normal sexual desire, the consummation of the projected marriage may be recommended.

Marriage without sexual intercourse.—There are people who have their own views respecting marriage, and who consider it sufficient to look upon married life principally as a domestic partnership, in which the sexual desire need not play any part at all. Thus individuals marry who are already so far advanced in years that sexual desire and the procreation of children are almost out of the question, and we must assume that it is not, on the whole, sexual feelings which bring them

together. There is no blame attached to them. One might, perhaps, conclude from this that homosexuals and other perverts have a similar right to contract marriage chiefly for such social considerations, that is, for the purpose of founding a domestic partnership, but what must be asked from them in the first place is that one side should not deceive the other. Under all circumstances, however, we must hold fast to the principle that we have monogamy only to deal with, such as it exists in civilised countries at the present time, and that we must regard as inadmissible every marriage a part-arrangement of which from the very commencement is the liberty of either side, or of both of them, to indulge in extra-conjugal intercourse, be it in the form of coitus or in that of perverse intercourse. I know married couples who, being on both sides homosexual, entered the married state with the express understanding that they should severally and separately look for gratification elsewhere in the manner preferred by them, but that there should be no conjugal intercourse between them. This is, of course, a domain with which the medical man has nothing to do, and one that is exclusively ethical or sociological. At any rate it is not our business to concern ourselves with such singular views and opinions which are so completely at variance with those universally accepted and with present-day ethics. We no more have to do this than discuss the suggestion made by *Ulrich* that two men shall have as much right to marry one another as a man and a woman have. If we are asked to advise in matters relating to marriage, we have to consider whether the preliminary conditions are present which morality, as we know it to-day, demands, and it is therefore our duty, as medical men to prohibit a marriage which begins by encouraging extra-conjugal sexual intercourse or by regarding it as something natural.

Which doctor is an expert?—So that serious consequences may be avoided, it is often desirable to consult an expert. An expert is not, however, a medical man who has been interested in the perverse sexual desire only, but one who knows both the normal and the perverse desire. Just as alienists who have seen exclusively, or almost so, inmates of lunatic asylums, are easily inclined to attribute insanity by mistake to people with

whom they come accidentally into contact, so he who has made a study of perverse sexual desire only, will suspect everywhere something perverse. He loses the objective and unprejudiced gift of observation, and is easily apt to forget that very often even in normal people there are signs of perversions which constitute in no sense an objection to marriage.

Limits of the medical opinion.—Of course, even an expert and experienced doctor is liable to make mistakes. It must not be forgotten that he has to rely to the greatest extent upon the statements of his patients and not upon objective manifestations. In addition, as we have seen, a great deal depends also upon the attitude of the other partner, for instance that of the wife, in perversion of the husband. It is therefore often a matter of surprise how happy a marriage turns out in spite of the presence of a pronounced perversion. I know the case of a man who suffers from periodical boot-fetichism, but whose sexual desire is otherwise perfectly normal. The wife, who is a very sensible woman, lets him do as he likes during these periods, which only last a few days; she even gives herself up to the perverse acts of her husband, and they live together happily and harmoniously. In other cases, again, the marriage reacts far more favourably on the disappearance of the perversion than the doctor imagined; for instance, in cases of psycho-sexual hermaphroditism. The difficulty of giving proper advice becomes greater still by the circumstance that several factors require considering which it is hard to compare with one another. Let us assume that in a given case there is every promise that in spite of an existing perversion—the husband suffers, say, from a mild form of masochism, but is nevertheless sexually potent,—a happy married life is likely to ensue, but that a degenerate offspring is to be apprehended; we have therefore two totally separate factors to weigh against one another. It is intelligible that it is not very easy here to arrive at a positive result. Or let us take the opposite case: a woman is psycho-sexually hermaphroditic, she has occasional homosexual inclinations, and we are afraid that this is likely to cause disturbance to the married life; with regard to the offspring, on the other hand, there is nothing unfavourable to be expected, as the two

parents and their families are otherwise healthy. Obviously, in such cases the solution is by no means easy. But then it is not the duty of the doctor to give in all such cases positive advice, he need not always say this, that or the other is bound to happen; he will rather often be able to leave the decision to the parties concerned after having given expression to his own apprehensions on the strength of his personal experiences. He is merely asked for his opinion in his capacity of private adviser, and just as he is under no obligation to go in his medical testimony before a court of law further than medical skill and medical science permit, so he is not called upon to do here. If this is his conception of his vocation, it will not often happen that he will give advice which will subsequently turn out wrong. On the other hand he cannot expect with certainty to be always right, because the disturbance in the married state and the degeneration of the offspring can only be foretold with a certain amount of probability, and a doctor, especially a family doctor, cannot always avoid giving positive advice on the strength of these probabilities.

XXIV

Alcoholism and Morphinism in Relation to Marriage

ALCOHOLISM AND MORPHINISM IN RELATION TO MARRIAGE

By A. and F. Leppmann (Berlin)

I. Alcoholism.

Character and extent of alcoholism.—Whereas in discussing the relations between the various groups of diseases and the married state one has to deal with quantities which are known, with notions which are interpreted by all doctors alike, the present chapter occupies with respect to terminology quite a unique position.

There is an involuntary tendency even among professional men to take the meaning of the term "alcoholism" in too narrow a sense and to look upon it as identical with the inability to resist under ordinary circumstances the desire for excessive indulgence in alcoholic liquors, or in other words with dipsomania.

It must, therefore, be pointed out that from the standpoint of science and for the purposes of practice, the word alcoholism includes all the changes, physical and psychical, which arise if alcohol exercises its toxic effect upon the human constitution either for a limited period only or permanently, that is for an unforeseen length of time. The limited effect produces acute alcoholism, the continued or long-lasting effect, chronic alcoholism.

The purely acute form of alcoholism does not interest us here very much. It finds its expression in the condition of intoxication, a condition which is usually not reckoned as a disease.

This purely acute intoxication may, however, become a morbid process if it is created on a mentally deficient basis (imbeciles, epileptics, traumatics). From this point of view it belongs to the chapter on insanity in relation to marriage.

We have here consequently to inquire into the action of alcohol which is not limited as to time, that is the chronic form of alcoholism, in the framework of which single attacks of drunkenness may constitute acute phases.

But for the complete interpretation of the term "chronic alcoholism," it is quite immaterial whether the cause of the chronically toxic action of the alcohol arises from an unconquerable craving for intoxicating liquors or from a harmless and even supposed beneficial habit, from the occupational necessity to taste liquors, or only from constantly working in the midst of alcoholic vapour. It is also immaterial whether the chronic intoxication is the result of an accumulation of acute attacks of drunkenness or of a continuous succession of slight semi-intoxications. The term "chronic alcoholism" in its scientific sense, which we have to utilise here, includes all these possibilities in an equal manner.

It is in reality nothing but a paraphrase of the nature of the chronic intoxication that is contained in *Kraepelin's* words: "Everyone is an alcoholic in whom the after-effect of a potion of alcohol has not yet disappeared by the time the next one begins." But still, this paraphrase shows simultaneously in an ingenious manner the way in which one has to proceed, in order to fix the quantities of alcohol which, consumed in a regular or often-repeated fashion, lead to the chronic intoxication.

Here again we are confronted by a question the answer to which finds no unanimity of opinion among the medical profession, because—one may safely say so—sufficient knowledge is not available. If we desire to do full justice to our subject we must ascertain first to what extent recent experimental psychology has advanced the question of the relationship between the quantity of alcohol taken and the duration and degree of its effects. The most interesting investigations relate to the action of the brain, that is of the organ which in alcoholism is affected in a most characteristic and serious manner.

It would take us too far if we were to discuss here in detail the method of these experiments. In the main, the endeavour is to find out how mental work of a simple character goes on after the administration of definite quantities of alcohol. An examination was, for instance, made into the endurance and quickness at adding up figures, into the ability to learn by heart a series of numbers, to read words passed quickly before the eyes, to write continuously the ideas associated with certain words named, etc.

The first to suffer markedly, after the administration of no more than 30 ccm. of alcohol, was the comprehensive faculty, and, what is especially important, it was observed that the person experimented upon, although not failing to give a reply, always gave the wrong one, simply talking at random. After 90-100 grammes of alcohol the faculty to add up figures was in the majority of cases diminished, the association of ideas varied as to their number, but declined regularly in value, for in the place of notional combinations there came rhymes, synonyms and similar mere "word-associations." Learning by heart was regularly difficult of accomplishment. If so-called choice-reactions were given as a test, that is, if a decision had to be made between two alternatives, the answers of the alcoholised persons came more rapidly—but they were wrong oftener than those of sober people.

In more difficult mental work *Aschaffenburg* was able to obtain considerable disturbances in a very original series of observations, already after the administration of 35 grammes of alcohol. He made compositors who had partaken of this quantity do their work. They all thought that they had worked better than ever, whilst as a matter of fact, they made in 7 or 8 experiments as a rule more mistakes than when in a sober state.

It is also of the highest importance that the effects of 90 to 100 grammes of alcohol consumed, disappeared, as regards the faculty of comprehension and observation after 4-12 hours, but as regards finer mental work not before 12-36 hours had elapsed. After 135-150 grammes of alcohol the action on the capacity for learning extended over 12-48 hours. By carrying out a series of experiments with 40-80 grammes of alcohol for several

days in succession, the result was seen to be an increasing deterioration of the work accomplished—after deducting, of course, the improvement in the work which practice day after day demonstrably achieves.

These experimental results have so far not been disproved. They have been obtained after a careful exclusion of all the known fallacies. The alcohol was administered mostly in the form of Greek wine which does not possess all the additional injurious properties of brandy (causticity on account of too high a degree of concentration, effect of fusel-oil) or of beer (too large fluid quantity). It goes without saying that the experiments were made not exclusively on abstainers who are not accustomed to alcohol, but also on individuals who are in the habit of taking the usual quantities of intoxicating drink. The above preliminary remarks on the meaning of alcoholism are not superfluous as is shown by the fact that at a meeting of medical men recently held, at which alcoholism was the subject of a long discussion, one of the speakers disputed the conclusiveness of the experiments made by the Heidelberg school on the ground that they had been instituted on teetotalers only, without being in any way contradicted.

There is consequently no doubt that a chronic alcoholic intoxication would, generally speaking, be brought about by the daily consumption, at one sitting, of 40-100 grammes of alcohol. Translated into potables, 50 ccm. of alcohol are equal to:

About 1.430	litre of Pilsen beer (3.5%)	
" 1.351	" " Munich Hofbräu	
" 1.564	" " Spatenbräu	
" 1.282	" " Berlin Weissbier	
" 1.020	" " Porter	
" 0.417	" " Moselle wine	(Taking in both cases a quantity of medium strength)
" 0.435	" " Hock	
" 0.542	" " Champagne	
" 0.204	" " Sherry	
" 0.125-0.167	" " Ordinary brandy	
" 0.100	" " Good Cognac	
" 0.067	" " Strong rum	

Translator's note. This figure may be taken as referring to the strength of English beers and lies which are considerably stronger than was usually called "lager beer."

It would appear therefore that the dangers which arise to the general community from alcoholism, are very serious seeing how many people there are who consume every day a bottle of wine, or from $1\frac{1}{2}$ -2 litres of Munich beer (about $2\frac{1}{2}$ - $3\frac{1}{2}$ pints) or $\frac{1}{4}$ litre (8-9 oz.) of brandy. Though there may be individuals here and there who can stand extraordinary quantities even for a length of time, this is more than compensated by the number of those who can endure less, and does not affect large statistics. Besides, we shall soon see what this "standing a lot" means on closer investigation. At all events we are justified by the results of the above experiments, more than by any other visible evidence of the injury caused to the nation, in giving expression to the following conviction:

Alcoholism is at the present day in Germany as well as in many other civilised countries, the most comprehensive danger to health.

It cannot be said that in comparison to older descriptions, there are now relatively more drunkards seen than in former times with the effect, say, that the aspect of street-life, or that of public festivities or assemblies has in consequence become more repulsive. On the contrary, in 1878, for instance, *Baer* thought that a satisfactory diminution of "drunkenness" was noticeable all over Germany. Nevertheless, the consumption of alcohol per head of the population has gone up considerably in most European countries during the latter half of the 19th century with regard to which only we possess any reliable statistics.

For Germany the conditions are such that in 1870-1888 (the year of the introduction of duty on brandy) there was on an average a consumption of absolute alcohol per head of the population to the extent of about 5.1 litres annually; after 1890, to the extent of 4.2-4.7 litres. On the other hand, the consumption of beer has since 1872 gone up by more than 1.2 litre of absolute alcohol per head per year. The consumption of alcohol by the population as a whole has consequently become considerably greater in proportion, and if it cannot be said that the number of notorious drunkards has increased likewise, that only means that alcohol is more equally divided among the general population than was formerly the case.

But that is just what is of the highest danger to the welfare of the nation; if drinkers and non-drinkers are strictly separated, the former may in the struggle for existence go down while the latter continue to propagate themselves as a vigorous race. Whereas, the more the difference disappears the more we must apprehend that the whole of the population will become enfeebled, instead of there being a process of survival of the fittest and destruction of those who are useless.

In other countries, by the way, the consumption of alcohol has gone up much more: in France from 2 litres in 1840 to 20.5 in 1895, in Belgium from about 9.8 (1840) to about 12.8 (1895), in England from about 7 litres in 1855 to about 9 litres in 1895.

A remarkable phenomenon is, further, the increase in the consumption of alcohol by women, which is said to be in England rather striking. In Germany it is not very well marked, but decidedly present.

Influence of marriage on alcoholism.—Now, what are the relations between married life and chronic alcoholic intoxication? Similarly as to other diseases, there frequently is a causal connection between marriage and the origin and disappearance of alcoholism.

In the first place, married life at times inhibits the consumption of alcohol. Many men—and it is the men principally who are the victims of alcoholism—drink only because they are accustomed to frequenting public-houses, and they frequent public-houses because they lack home comforts. In their case, marriage is capable of affecting an improvement forthwith. A similar result is achieved by the more serious view of life which the founding of a family produces in many men, particularly among the well-to-do classes, who were formerly in the habit of carousing merely for amusement and for deriving a certain superficial pleasure. Some people devoid of self-reliance and accustomed to take part in the follies of others, may get rid of their injurious drinking habits not in consequence of marriage as such, but by the influence exercised by a clever and determined wife.

On the other hand, it is but rarely that marriage as such and uncomplicated by definite inner causes, leads to alcoholism. But still there are undoubtedly cases where healthy, and also from a psychical point of view average, individuals are so far influenced by sorrow and misfortune in their married life, as to seek oblivion and insensibility in drink.

The circumstances are particularly intricate in the case of people whose inclinations are not of the ordinary kind but who are severely tainted, and pathologically predisposed. It is well known that these have, especially if directly predisposed to dipsomania, a peculiar tendency to fall victims to alcoholism, and although it is wrong to suppose in every drunkard such an original predisposition, the percentage of those among them who are hereditarily degenerate, is still very large.

Here, marriage is seldom of any use as an antidote if alcoholism is already developed. Quite the reverse; some of these degenerates are more likely to be influenced by marriage in the direction of becoming drunkards. The moody individual, the paranoic, the man with a temper and a changeable disposition—they all have in married life no end of opportunities for conflicts and therefore excuses to drown them in drink. She must be a very diplomatic and clever wife who can prevent this.

As to the participation of women in alcoholism, marriage can acquire an importance in an unfavourable sense only. As in most European countries public-house life as well as the prevailing drinking-habits or occupational opportunities do not come into question as regards the female sex, young women given to alcoholism are as a rule either severely pathological persons or individuals who have sunk so low that a beneficial influence on the part of the husband can hardly be of any good.¹ It is, however, imaginable that females not used to alcohol, may feel tempted to follow the example of their drinking hus-

¹Translator's note: This does not apply so well to English as it does to German conditions, for whereas in Germany one hardly ever sees a drunken woman, the sight is in England by no means rare. Nor is it unusual for women, especially of the poorer classes, to frequent public-houses, a thing seldom seen in Germany, where, however, women make more use of restaurants than in this country.

bands etc., especially if encouraged to do so by the latter, as it is well known that drunkards find a delight in causing the downfall of their friends as well as their own. An unhappy married life may in women, too, be the cause of their recourse to alcoholic drink. Now and then, physical exhaustion through repeated labours, or other domestic fatigues, induce a married woman to seek strength from increasing quantities of wine, beer or spirits, until, though otherwise happy, she becomes a chronic alcoholic. We remember having seen such cases where even in the absence of predisposing factors or other social causative circumstances, an insuperable craving for drink and severe manifestations of chronic alcoholism arose through the above-mentioned conditions of fatigue. Sometimes lactation leads to the formation of the drink-habit as on its account delicate mothers are often persuaded by their solicitous doctors and relatives to take beer.

Statistics give us in relation to the causal connection between marriage and alcoholism figures which can only be interpreted with difficulty.

Thus there were in Bohemia in 1899 among 25,292 notorious drinkers 18,253 = 72.17% who were married, 4718 = 18.65% who were single and 2321 = 9.18% widowers. But on the other hand there were 17,741 = 70.22% more than 40 years old. Now, as at the age of 40 and upwards there must be considerably more married men than between the ages of 15 and 40, and, moreover, as among the entire male adult population there are far more married men than single men, an influence of marriage on the number of drunkards cannot be deduced from these figures. Besides, the figures differ in various localities. For instance, there were in Vienna in 1900 among 1247 drinkers, 530 who were single, and 607 who were married, figures which compared with the proportion of single men and married men to the entire population, would probably show a considerably smaller number of married men among the drinkers. Against that, experience teaches that there are many drinkers who do not marry, tramps, beggars, habitual criminals, paupers, etc.

We possess, however, more abundant material for the eluci-

dation of the opposite question: How does alcoholism influence married life?

Influence of alcoholism on the married state.—Married life may be regarded from four separate points of view: That of the sexual partnership, that of the mental partnership, that of the mutual material welfare and that of the procreation and up-bringing of a healthy progeny:

a. Sexual partnership.—In none of these points does alcoholism leave the married state undisturbed. Occasionally, though, the sexual relations form an exception to this rule. The copulative faculty of the alcoholic need not necessarily be materially impaired. And yet, this also applies only to a small proportion of all the cases. In the first instance, alcoholism, if it is accompanied by frequent attacks of acute drunkenness, is capable of seriously impeding the exercise of the sexual intercourse. Who does not remember the words of the obscene porter in Shakespeare's "Macbeth": "Lechery, sir, drink provokes and unprovokes; it provokes the desire, but it takes away the performance"? The drinker is just in the midst of his intoxication seized most strongly by sexual desire, but the member does not become sufficiently erect, and there is no power of copulation; besides there is the disgust which the female married partner experiences towards the drunken husband and which usually causes in her a disinclination to submit to intercourse under such circumstances. Then, in the intervals between the single excesses the real alcoholic is languid, tired, irritated, in brief, in a psychical and physical condition which deprives him as much of the desire for sexual pleasure as of the ability to perform sexual intercourse. In the not very rare cases in which alcoholism has reached the stage where drunkenness alternates with exhaustion, there is sometimes a complete cessation of all sexual intercourse between the married partners.

But that form of alcoholism which does not consist of single bouts but of a customary excess that need never lead to drunkenness, can also interrupt the sexual partnership. The alcoholic nervous debility, a frequent consequence of continuous intoxication, is capable of producing inability to perform copulation or a weakness of the copulative power, as much as any other

neurasthenia. Whether the anatomical changes, namely the degeneration of the epithelium of the tubuli seminiferi demonstrated by *Roesch* and *Lancereaux* which determines the procreative faculty, have any material influence upon the copulative faculty, is questionable.

At all events the fact remains that the chronic alcoholic has a weak erection. At the same time, though, the weakling is not at all wanting in desire, and the latter increases rut-like with every single bout of drunkenness. Thus he seeks in his intoxication special excitements to sharpen his impaired sexual power, and this craving for excitements makes him a pervert. In this way the chronic alcoholic becomes an exhibitionist, a pæderast, sodomite or sadist, or he is driven to commit immoral acts with children. Into this latter method of gratification he is, perhaps, also influenced by the circumstance that in the presence of sexually inexperienced persons he has no need to be ashamed of his infirmity.

It goes without saying that in the perverse intoxication-acts exercised under the influence of chronic alcoholism, the combination with congenital or acquired deterioration plays an important part. One of us (*A. Leppmann*) is, however, able from personal experience to point out that he knows cases where the chronic alcoholic degeneration alone led to perversion of the sexual desire, especially when in a state of drunkenness. Thus he had to testify once in the case of a foreign clergyman whose eminent abilities secured for him very early a position of world-wide repute but who sank gradually lower and lower because of his drunken habits. The chronic alcoholism developed in him in the course of time a degenerative symptom in the form of a periodical strong craving for drink. At the height of the latter he experienced, though otherwise sexually normal, a desire for intercourse with males, and he attempted to commit indecent assaults upon boys.

b. Mental partnership.—The mental partnership of married life is interfered with by alcoholism much more seriously and regularly.

From the observations made above with the object of showing in its true light the significance of alcoholism, it follows

that the intelligence, the sensible mode of thinking, is bound to suffer severely from the effects of alcohol.

Expressed in occurrences of our daily life, the results of the investigations by the Heidelberg observers do not really mean anything else than that the alcoholic of a lower degree frequently dazzles, as long as he is under the immediate influence of alcohol, by his quickness at repartees, his wit and his ingenious ideas, but that he lacks the power of quiet discrimination, and what is rightly called "sober" common sense. The plus which he owes to the action of the alcohol imposes, perhaps, upon people to whom he is not bound by close ties, but the married partner who has to share with him the serious side of every-day life, with whom he has to discuss points of the highest moment, is only estranged from him even by this mildest of the results of intoxication. This estrangement increases if larger quantities of the poison begin to exercise their effect, thus still more hindering and impeding the free course of common sense. Where things have gone so far, other results generally manifest themselves which gradually transform the personality in a very unfavourable sense.

In its mildest degrees this transformation escapes, perhaps, as yet entirely the attention of the superficial observer, but it is nevertheless apt to loosen very sensibly the moral ties of the matrimonial union.

To the extent to which thinking becomes permanently difficult, the faculty to grapple with scientific and practical problems is impaired, and the harder it gets to pass quickly from one subject to another, so the sphere of interests becomes narrower and narrower. What mental work can still be executed is devoted merely to the unavoidable duties of the vocation, and these are frequently only discharged in a half-mechanical manner. The husband who formerly stimulated his wife mentally, hardly shares now her daily worries. Nor is he any longer amiable to her as he does not feel comfortable at home. He experiences the mental restraint as a burden which bows him down, and it drives him to the public-house where, though the restraint itself does not leave him, the feeling of it does. This is the sort of people whom the appellation "Bierphilister" suits to perfection.

A certain contrast to this dullard is supplied by quite another type: the alcoholic-neurasthenic. In some individuals, especially such as are nervously predisposed, alcohol creates from the beginning an irritable weakness of the nervous system which presents quite a different picture than the above-described gradual dulness, but which is at least just as injurious to married life. An inner unrest and sadness appears, there is a sensitiveness which renders every contradiction, every noise which the children make, unbearable, and an incapacity to persevere with one's work. The husband demands from the wife considerations which go beyond all reason, while he, on his side, treats her, when in a bad mood, with a harshness amounting to brutal callousness.

These two forms of psychical change may form a combination under various circumstances. They have both alike the result that they lead to a relaxation of the mental partnership of married life, both tend to aggravate the desire for alcohol. For, just as the alcoholic dullard hopes to derive stimulation from further consumption of alcohol, so the nervous alcoholic thinks that more drink will act as a sedative and soporific.

The next stage brings a still far greater destruction of the moral companionship of married life. There is an extinction of all sense of right and wrong, of decency and shame. Self-control and affection disappear completely. The drunkard boasts before strangers about the intimacies of his married life, he neglects his family, he sinks with respect to his mode of life below the level of culture from which he started. This stage of alcoholic intoxication has an extremely close relationship to the decadence into crime.

Crime on the part of one of the married partners—no matter what the nature of the crime is—is always of such immense influence on the harmony of married life that it is necessary in connection with the subject of alcoholism to discuss this point somewhat minutely.

Not only does common crime of every description denote according to well-established opinion such a degree of depravity that fellowship with a criminal is looked upon as a degradation, but the crimes committed by alcoholics are to a great extent

directed against the married partner, or they transgress against the duties of the conjugal union. Then there is, in addition, the interruption of the cohabitation which is unavoidably associated with every punitive imprisonment.

An investigator who has estimated the consumption of alcohol leading to alcoholism at too high a figure rather than too low (*Baer*), has found in statistics dealing with more than 30,000 male prisoners (detained in penal establishments and houses of correction) no less than 43.9% drinkers, and among 2796 female prisoners 18.1% drinkers. Another observer has even increased this figure to 44.7% and established that the worst offenders, those condemned to death, are drinkers to the extent of as much as 59.9%. One sixth of all who were condemned, and two fifths of all serious criminals had committed the crime in a state of intoxication.

Now, which crimes are principally committed in a state of drunkenness or by habitual drinkers? Defamation, bodily injury, damage to property and offences against morality—just those which are most intimately connected with married life. The frequency with which drinkers insult and injure people who are not related to them, as evidenced by the number of cases which come before the law-courts, gives a good idea of the amount of unknown and legally-unpunished ill-treatment undergone by the wives of alcoholics.

The manner in which the alcoholist acquires a special inclination for immoral offences has already been described. But there is something else besides, which induces him to perpetrate crimes of a sexual character. If he is already morally dull, each single consumption of alcohol further influences his psychical state in the direction of a diminution or extinction of the inhibitions. Everything that education, thought and acquired refinement of the senses oppose in man under ordinary circumstances against the crude power of the natural desires, disappears more and more, and in matters sexual the limits of the permissible and even of the desirable are gradually obliterated. Hence the proneness of drunkards to rape, which is unmistakably evident from criminal statistics. From similar motives the alcoholist also commits uncommonly often that other offence

which is so directly injurious to the harmony of married life, although it rarely becomes a matter for judicial consideration, namely adultery. Indeed, it may be said that the latter assumes in alcoholics a particularly unpleasant form, inasmuch as they practise it not secretly, but in the eyes of the whole world without any regard to the conventionalities of life and even with a certain amount of boastful arrogance.

Drinkers particularly who are not without means, are often more than others tempted to do so. Unscrupulous women easily find in them suitable objects for spoliation by means of illicit relations. And many of the older alcoholics who are as a rule already sexually debilitated and outwardly not very attractive, feel too much flattered by the attention of these "ladies" to reflect beforehand what consequences are likely to result from an intimacy with them.

Alcoholism may bring its victims so far as to cause them in their sexual callousness to brutally exceed even the limits drawn by blood relationship. The crime of incest in the form of intercourse with one's own children is, according to our experience, committed almost exclusively by drinkers—excepting lunatics—or, at any rate, under the influence of alcohol. In looking over the records of such cases we are almost invariably confronted with the same picture: an unhappy, miserable family life; the husband a drinker, the wife aged before her time through domestic strifes and constant drudgery rendered necessary by the long idleness of the head of the family, the children utterly corrupt at an early age through the base influence of such an upbringing. One day the father, having come home drunk, demands that his 14 year old daughter should come to bed with him. There follow blows, kicks, finally the half-grown-up girl gives way, if she has not, in consequence of a total want of moral feelings, willingly acquiesced in her father's wish from the very beginning. This is repeated now and again, until the neighbours get to know about it and inform the authorities, or until the wife, mad with rage after an especially severe ill-treatment, runs to the nearest police-station and tells all that she has hitherto suffered at the hands of her husband.

We have even known cases where alcoholism has led to

procuring, the woman in question being one's own wife. And not only does this mean that the rough and unfeeling drunkard tries to utilise every possible source, including the prostitution of his wife, to obtain the money wherewith to buy more drink, but the relations are more complicated. The alcoholic dullard has his benevolent moods during which he would like to be amiable to everybody, and so the idea occurs to him to find a substitute who can grant to his wife the sexual gratification which he himself is no longer capable of giving her. The length to which such an enfeebled alcoholised brain can go is shown by a case known to us where the drinking husband recommended to his wife in all good-nature to enter into sexual relations with her step-daughter. This procuring is only apparently inconsistent with the jealous outbursts of the same individuals—these men are but the slaves of their momentary disposition.

Female drinkers incline in the same way to adultery, and especially in the form of prostitution. Only the misery of such marriages does not last so long as a rule, as the husbands, less patient than the wives where the circumstances are reversed, soon put an end to the shattered married life by an appeal to the divorce-court.

The last act in the tragedy of mental decay which takes place in the drunkard is the outbreak of pronounced insanity.

We need recall here but briefly the individual forms: *Delirium tremens* with its unrest and confusion, in which a total absence of understanding of the surroundings and serious attacks against the persons most closely related to the drinker, may be expected every moment. Hallucinatory insanity of longer duration which, though it presents a better recollection of the environment, is similarly accompanied by a delusional transformation of the consciousness. The peculiar so-called "*Korsakoff's disease*" in which the patients know how to conduct themselves like reasonable and sensible beings, but, at the same time, have no idea to whom they are speaking, where they are and what they have done as recently as the previous day.

So long as such forms of disease exist there can, of course, be no question of a mental conjugal partnership even of the simplest kind. The same result is not quite so flagrant though

perfectly unmistakable on closer examination, in another series of alcoholic mental disturbances, the prototype of which is alcoholic feeble-mindedness. The latter is characterised by a permanent indifference towards one's own vital interests, associated usually with a merry disposition, which, however, easily changes into a plaintive or angry mood, and with a severely impaired capacity for thinking and understanding.

When the patients come to us sober they generally create the impression of being well-behaved and distinctly good-natured persons, they exhibit a certain garrulous and boisterous "bonhomie" and know how to pass over all the dark points of their former life smilingly and with some trifling answer or other. But if these indications are followed up, and the history of these individuals is obtained as it has proceeded in reality, we discover in this very same bright and artful disposition a most dreadful stupidity, a perfect one-sidedness and unconcernedness with regard to their own activity, an inability to estimate the conditions of life, like in entirely ignorant congenital imbeciles, and a complete absence of the will-power. These people do not know and they no longer believe that they drink or have drunk too much, they are convinced of their own perfection, they stick to hundreds of apparent excuses as an explanation why they do not work and why they do not as a matter of fact do anything.

And then, what a transformation, when one of these jovial, good-natured men is under the influence of alcohol! He is then a perfect wild beast. He demolishes the furniture at home, threatens the wife with the kitchen-axe, ill-uses the members of his family, in brief, he is downright raving mad. After having had a good sleep, he explains with some slight embarrassment, that he has had a little difference with the wife over some trifling matter, that she is so domineering, and that he somewhat lost his temper and probably became a bit vehement.

It is rarely that one misses in this picture a trait which, strange to say, is generally absent in the other forms of weak-mindedness, namely jealousy. The alcoholic imbecile whose own conscience as regards conjugal fidelity is often not quite clear, thinks himself justified in reproaching his wife with

adultery, because he has seen her once in conversation with some old friend, or because it seemed to him that some passer-by has touched her caressingly, or because he thought a laudatory observation by some third person a suspicious circumstance. Occasionally this jealous mania becomes the most prominent symptom, while the general intellect is less affected, and one can speak in such a case more of a chronic craziness than of weak-mindedness.¹ As regards the conjugal partnership this form is naturally just as disturbing and even more disastrous than simple mental unsoundness. Quite a number of the cases of crime committed by jealous husbands which are reported in the newspapers are due to this jealous mania of drinkers.

While on the subject of alcoholic insanity, let us mention briefly a special form of alcoholism, the periodic drunkenness, which represents undoubtedly a mental disorder in the narrowest sense. Though it is quite independent of other alcoholic tendencies, it can nevertheless develop as a consequence of alcoholism.

These are the alcoholic mental disturbances in the narrower sense only. Associated with them are all those cases in which alcohol favours the outbreak of an insanity on the basis of epilepsy or congenital imbecility or that of a paralytic insanity.

In order to obtain from figures something like an idea of the amount of destruction which alcohol exercises on the human mind let one compare the following statistical statements: In

¹Translator's note: The most extraordinary thing of this sort I have ever seen was the case of a patient of mine, a chronic alcoholic, who had occasional attacks of delirium tremens of rather a mild character. On one occasion, when he was already getting better and was able to converse rationally on different matters, his wife came with him to my rooms to ask me to talk to him with reference to the awful charge he was bringing against her in the hearing of the neighbours. He accused her of committing adultery with a man while lying by his (the husband's) side and undisturbed by his presence. I tried to reason with him, but it was all in vain; he persisted with the charge, while the tears were running down the poor woman's face. He was so circumstantial in his details and so sure that he could identify the man, that I almost began to have my doubts as to whether he was not right after all, though the thing seemed preposterous. A day or two afterwards, he had forgotten all about the incident and all he remembered was that he had been to my rooms with his wife, and that he had been rambling. The case made upon me at the time an uncommon impression, and I shall never forget the scene.

1896-97 there were 917 persons admitted into the municipal lunatic asylum of Breslau on account of delirium tremens, and in Königsberg 119 into the municipal infirmary. In the province of Schleswig-Holstein there were in the years 1883-1888, 2.13% of cases of delirium tremens to every 10,000 inhabitants, altogether 1463 cases. In the high-class private asylum of *Dr. von Ehrenwall* in Ahrweiler there were from 1888 to 1897, 11.4% of the male inmates, or 755 persons, suffering from alcoholic insanity.

It is much more difficult to ascertain statistically in how many insane persons drink has played a considerable part at all. Here the figures of the different observers fluctuate between 8 and 50%, and not at all proportionately to the greater or smaller quantities of alcohol consumed as a rule in the districts to which they refer. But it is just the smaller figures which exhibit considerable fallacies. Whether a case of alcoholism is present or not we can as a rule find out either from the patient himself or from his relatives. But these people are naturally always inclined to maintain silence on the subject of alcoholism or at any rate to make light of it. Then a great deal depends upon the manner of asking. To the question: "Is your son, or husband, a drinker?" almost every woman will answer "no," for she understands by it whether he is often senselessly drunk. But that he drinks 8-10 glasses of beer a day or a fair amount of spirits she—or even he himself—will often readily admit even after having answered the first question in the negative. Besides, it must be taken into consideration that patients with the most characteristic form of alcoholic mental disorder, namely delirium tremens, are frequently rejected on principle by provincial lunatic asylums and transferred to general hospitals, whilst alcoholic imbeciles usually vegetate, as it were, outside the asylums. The average of those in whom chronic alcoholic intoxication has co-operated materially in producing insanity cannot be estimated much less than 25% of all insane persons.

There are nowadays ingenious doubters who interpret the frequent concurrence of alcoholism with insanity and crime quite differently than we have hitherto done. The two latter occurrences, they contend, are not causally subordinate to the first.

but of equal rank to it; all the three of them spring from the same source, from the deteriorated state of the mind, the psychical degeneration which is quite especially associated with hereditary predisposition or with early-acquired defects of the brain. This suggestion has a very plausible nucleus which we have not left out altogether from our former remarks.

Enfeebled brains, degenerate individuals mostly incline to alcoholism and are hit the hardest by it. But directly we begin to understand this, we see what an enormous exaggeration it is simply to place alcoholism, crime and insanity as equally subordinate results of the hereditary degeneration.

The germ of alcoholism, crime and insanity does not lie in this degeneration, as in the seed-corn the germ of a definite plant. The point is rather a congenital absence of harmony of the soul, of equilibrium between desires and inhibitions, and it is by the aid of this absence that a definite injury develops, but only under certain well-defined conditions of life. Now, there are the following possibilities: either the conditions of life are so favourable that the weakness of the original tendency is thereby entirely overcome; education and social conditions are so advantageous that the degenerate remains, nevertheless, a sober and honest man and does not become insane. Or, again, the conditions of life are so unfavourable, bad examples, insufficient nutrition, injudicious treatment so act in conjunction that all the above three injuries set in, and, indeed, independently of one another. Between these two extremes there is, however, a certain average of the conditions of life, in which it may easily happen that the decay into crime or insanity is retarded until the insufficient inhibition leads the mentally degenerate to drink. Then, only when alcoholism with its consequences has been added to the congenital defect, only then do those further signs of decay become manifest. That these cases, in which alcohol plays a very material part as an intermediate cause, are very frequent, medical men who are attached to lunatic asylums and prisons are in the habit of seeing regularly, and we may well say to ourselves: had it been possible to keep these people away from alcohol they would not have become criminals or lunatics.

But alcoholism as such may, though perhaps in the minority of cases, act immediately as the original and principal cause of the insanity or of the sinking into crime respectively. We know that numerous people acquire the habit of drinking injurious quantities of alcohol under the influence of physiological recklessness, through indiscriminate seeking after pleasure, through drinking-customs which it is difficult to disregard, through tempting opportunities, through particularly hard and thirst-producing work, through trouble and misfortune. Even if they were not through this alone to become criminals or lunatics, slight additional causes are then sufficient to bring about, along with alcoholism, the other serious consequences. Social misfortune, special temptation, an unhappy married life, etc., induce the alcoholic far more easily than the healthy man to commit breaches of the law; as to such offences as bodily injury, defamation, and so on, there is not even any need for other co-operating causes. Insanity, moreover, attacks the alcoholic, even if he was hereditarily untainted and originally perfect, sooner than sober persons, if such accidental agencies as injury to the head, syphilis, want or imprisonment come into play. A few figures will confirm this statement. We know that in Norway stringent laws have diminished extraordinarily the consumption of alcohol. In 1830, there was a consumption per head of the population, of 8.7 litres of absolute alcohol, in 1843, 5.7 litres, since 1898 never more than 3.4 litres; in 1896-98, 2.25 litres for each year. The numbers of suicides have decreased correspondingly, though not at exactly the same rate: 1831-35, 97 per million inhabitants; 1841-45, 106; 1876-1880, 72; 1880-85, 68; 1886-88, 66. The admissions on account of alcoholic insanity into the lunatic asylum of Gaustad went down from 13.7% of all the inmates (1856-60) to 2.4% (1886-88), those into the other Norwegian lunatic asylums from 8.4% (1872-75) to 3.5% (1886-88). In those States of the North American Union in which the sale of spirits is prohibited there were 2.4 prisoners and 3.3 workhouse-inmates to every 100,000 inhabitants; in the other States the figures were 3.7 and 7.9 respectively.

We have consequently not deviated from the domain of

what has been proved on purely scientific and practical grounds, if we included among the results of alcoholism which destroy the moral side of the marriage union, crime and insanity. We may well conclude this portion of the present chapter dealing with drink and the mental partnership of marriage with a few more drastic figures. In lower Austria there were in 1900, 56 out of 606 married male drinkers living apart from their wives, and out of 35 married female drinkers as many as 12 apart from their husbands. As to divorces in countries where dipsomania of one of the married partners is regarded as a ground of divorce, percentages up to 75 are given for this cause and others associated with it.

c. Material solicitude.—The material care of the alcoholic for his family diminishes regularly with the progress of the mental decay. Where the moral decrepitude or unrest has reached a pronounced degree, the earning capacity of the drinker whose vocation centres in himself undergoes deterioration. As officer, employee, or manual labourer he is no longer equal to the demands made upon him and is soon dismissed from his situation. If the mental faculties are fairly well retained and the trouble consists more of occasional excesses, great annoyance is caused by these periodical outbreaks of drunkenness, especially among the better classes, though a certain amount of latitude is otherwise not denied in higher circles in matters relating to alcohol. It is rather the less serious forms of alcoholic excess which may severely damage the material position of the single individual.

But if we wish to properly appreciate the significance of alcoholism to the material side of married life, we must take into consideration a field which we have hitherto left out of account, namely the physical consequences of alcoholism which involve a premature incapacity to earn a livelihood and a shortening of the life-duration.

Very few organs escape the disease-producing effect of this poison which is so destructive of albumen.

Beginning with those which the alcohol reaches first, namely the digestive tract, we find at its very portal an inflammation of the mucous membrane which extends in reality down to the

stomach. In the latter the disease manifests itself by chronic gastritis which is very rarely due to any other cause than chronic alcoholic intoxication, and which alone is sufficient, if demonstrated with certainty, to give an almost sure indication of the true state of affairs.

The intestines suffer, as a rule, rather less from the poison, but the liver, on the other hand, correspondingly more. It is generally swollen in alcoholics, partly through the congestion of blood, and partly—this being principally the case—through excessive accumulation of fat. Fatty degeneration of the liver, too, it is safe to say, is an almost infallible sign of alcoholism.

Of greater seriousness is cirrhosis of the liver which apparently occurs in spirit-drinkers only and seems to be connected with certain extra-poisons contained in the alcohol.

This restriction does not apply to cirrhosis of the kidneys, which is, besides, not so exclusively attributed to alcoholism.

To the vascular system alcohol causes enormous injuries, by giving rise to fatty degeneration and inflammations in the myocardium, which rob it prematurely of its activity, and to a rigidity and friability of the arteries with all their consequences.

The nervous system is affected particularly severely. We have already mentioned the mental disorders, among which delirium tremens occupies the foremost position on account of its dangerousness to life. The chronic inflammation of the pia mater and the hæmorrhagic exudation from the dura mater are both of them characteristic drunkards' diseases. But it is more frequently the nerves themselves which become inflamed under the influence of the alcohol, and thus arise the terrible pains in the extremities which are often for years wrongly attributed to rheumatism. The inflammation of the nerves leads further to awkwardness of the movements, to weakness of the muscles. To this is added the well-known tremor of the fingers, which is very troublesome in finer work from the very commencement.

Of the organs of the senses, it is especially the eye which is injured, as alcohol alone may lead to impaired vision through atrophy of the optic nerve, and in conjunction with abuse of tobacco, to extreme amblyopia, or even to complete blindness.

Of other diseases which seriously injure the earning capacity or shorten the duration of life, and in the origin of which alcohol is often a co-operative factor, we may name the following: gout, general paralysis of the insane, tabes dorsalis, chronic bronchitis. Of what importance all these maladies are to the married state, has already been described in previous parts of this work.

Besides, there is hardly a bodily illness upon the origin and course of which alcoholism—excepting of course the medically prescribed administration of regulated quantities of alcohol—does not exercise an unfavourable influence. It is, just to mention a few examples, an old-established maxim in medicine that genuine acute pneumonia, as long as it is confined to the one side, always heals up in adults except in alcoholics, because the heart in the latter is not equal to the increased demands made upon it.

It is at the present day generally recognised that that other scourge of humanity, tuberculosis, attacks drinkers more readily and overpowers them more quickly. A third disease of the masses, general nervous debility, is also not only causally closely connected with alcohol, but in its course, too, it is most injuriously influenced by it. We can very well say in this respect: Even such small quantities of alcohol as a healthy man can take with impunity, act upon the man with weak nerves as a poison.

Very remarkable is the intimate association between alcohol and sexual diseases which *Forel* has demonstrated by means of figures. As the alcoholic or the person who is under the occasional influence of alcohol, makes up his mind more readily and with less caution to indulge in extra-conjugal sexual intercourse than the individual who is sober, he is also more subject to the dangers of that intercourse. And what sexual disease means to a married man as regards his own health and happiness, the health of his wife and that of his offspring, we need not enter upon in this place.

There are two more consequences of alcoholism which are of the highest importance to the material welfare of the married state, and which require on that account special consideration. They are suicide and accidents.

Both have that in common that their numerical relationship to alcoholism is not easily ascertainable by statistics.

If we examine the statistics of suicides we find as a rule that drink and drunkenness account as causes, only for about 9-10% of the cases. Though this alone would mean for Prussia from 400 to 500 cases annually, the real state of affairs is certainly far worse. For we must also include those cases in which alcoholism leads in an indirect way to self-destruction either through pecuniary losses, moral decay (suicides in prisons or through fear of punishment) or insanity and a corresponding percentage of the very numerous cases of suicide from unknown causes. It is surely one-sided and superficial to impute the increase in the number of suicides which has been observed in the last few decades to the increase of alcoholism, but the above-quoted decrease in those countries where it has been possible to diminish materially the consumption of alcohol cannot altogether be an accident. Of great value is also the experience of *Heller* who found that of 300 suicides examined post-mortem, the majority of all the males and especially of the men over 30 years of age (55% and 73.6% respectively!) exhibited the well-marked signs of chronic alcoholism. It must be admitted, though, that this material emanated from a port-town given to much grog and brandy drinking.

As regards accidents, statistics leave us apparently quite in the dark. The Prussian statistics give among the fatal accidents for 1869-73, 4.66% as caused by drink, those of Saxony for 1847-76, 6.2%, and those of Switzerland 6.5%. It is true that in Switzerland in 1893, 18% of all the accidents could be attributed to drink, but against that *Waldschmidt* found in an exact calculation made by him among 955 industrial accidents only 11 which were due to drink.

In reality we must, in order to arrive at correct results, distinguish strictly between the effect of drunkenness and that of alcoholism. A drunken workman is sent home and not allowed to work at a dangerous trade wherever there is some amount of supervision. On the other hand, it is those consequences of the drink habit which do not every time bear the impress of an acute intoxication, that play here the most important part, be it that

they are the immediate after-effects of the usual evening drink or of the Sunday bout, or the permanent injury to the entire constitution which manifests itself especially by clumsiness of the movements and by an imperfect presence of mind in the face of a threatening danger. In the Berlin high-building trade 25,295 accidents have been statistically dealt with. It was ascertained that by far the most of them had occurred on a Monday, the day after the day of rest, which should in reality be a day of recreation and recuperation; the figure was 18.7% against 16.6% on Fridays, and so decreasingly down to 15.6% on Tuesdays. Can anything else account for this but the excessive drinking on the Sunday? Another point. Before the breakfast interval there happen 13.6% of the daily accidents, after the same and until mid-day 23.5%, from then until tea-time 21.8% but afterwards until work is stopped 37.6%. This cannot be due only to fatigue in consequence of which the workmen take a wrong step or make the scaffolding less secure, etc.—there must be something else besides, and that something is the alcohol of which more or less is partaken at the different meals.

Really perplexing is the comparison of quite recent statistics by *C. Fraenkel* with those of older dates. *Fraenkel* has gone through the numbers of accidents of the trades unions association for the 8 years from 1894 to 1901, altogether no less than about 400,000 cases. Curiously enough the day on which most accidents had happened proved to be Tuesday, then followed Saturday, Friday, Wednesday, Thursday, Monday, Sunday. At the first glance this seems an extraordinary succession, but it is consistent all through, even if we take the year 1901 by itself. The explanation is as follows: The annual reports of the mining authorities show that a large number of workmen do not turn up on Mondays, on which day they go on the spree. That is why Tuesday is the principal accident day!

Where an accident has happened, it is again alcohol which prevents in the first place the recovery from the consequences thereof in the sense of a complete restoration of the working ability. All experts in traumatic diseases know with what difficulty a man accustomed to alcohol, overcomes for instance the complaints arising from slight injuries to the head or the pain

in the soft parts that have been bruised. That the joint action of alcoholism and accident, without any hereditary predisposition or without an original tendency to degeneration, is sufficient to produce severe nervous infirmity, may be regarded as indisputable.

But not only does the chronic alcoholic much sooner than the sober man find himself in the position of having to relinquish the maintenance of his family entirely or partially, he also occasions at the same time a drain upon the family resources, which is not caused by the expenditure for drink only. There arise also expenses in connection with medical treatment, journeys to watering-places, the stay at some institution, civil and criminal proceedings; and how often is the public-house life associated with all sorts of expensive indulgences, chief among them being gambling and women!

It is difficult to ascertain by anything like large figures how many people die prematurely from the effects of alcohol, because mortality statistics too often conceal deaths from alcoholism under such columns as suicide, accident, insanity, heart-disease, arterio-sclerosis, disease of the kidneys, disease of the liver, chronic nervous diseases, etc.

But there are other very conclusive statistics, namely those on the average duration of life in individuals who are employed in the alcohol industry, owners and workmen or employees of breweries, distilleries, wine and beer-shops, hotels and public-houses. It appears that brewers, landlords and landladies have a considerably lower expectation of life than the average population. To give a few of the more striking examples: An average inhabitant of Munich at the age of 20 may expect to live yet nearly 42 years, a Munich brewer only 22.38 years, a Munich landlady 32 years. In England the mean expectation of life at 25 years is 36.1 years, that of publicans, etc., only 31.3 years. And it is worth remembering that these are people who are as a rule in comfortable circumstances, in whom there are presumably no special occupational injuries to be apprehended except the temptation to drink.

In all the alcohol industries taken together, the expectation of life of individuals 25 years of age is according to official Prus-

sian statistics only 26.23 years, that of the other male population 32.08 years.

The insurance companies reject notorious drinkers. Some foreign ones even grant to total-abstainers special reduced terms. *Hellenius* has published a number of tables which show that total-abstainers have, in comparison with (alleged) moderate drinkers a materially higher expectation of life.

It would be a thankful object-lesson on the part of our national insurance offices, possessing, as they do, the necessary material for the purpose, if they were to publish statistical information on the relation between alcoholism and the premature decline of the earning ability. One of us has as confidential adviser to the Berlin Assurance Institute to examine yearly a great number of nervously-diseased applicants for annuities among whom a strikingly large percentage show a more or less complete participation of alcoholism as the cause of the infirmity. He is not however in a position to supply any definite figures.

Absolutely unreliable are the drinkers' statistics of most of our poor-law authorities. The percentage of those who obtain relief fluctuates here between 1.7 and 90%. In a workmen's colony for unemployed, 77% of the colonists—about 5500 in the year—attribute the cause of their poverty to drink.

In the States of Ohio and Illinois where the drink trade flourishes, the credit deposits of the public savings-banks amount to 23.5 and 34.6 million dollars respectively; in the State of Maine which has 5.5 to 6 times less inhabitants, but where the trade in alcoholic liquors is prohibited, to 53.4 millions.

Influence on the offspring of alcoholics.—

As the last—but not the least—object of marriage we gave the procreation and education of a healthy and useful progeny.

On the strength of the fact that the sexual organs of drunkards exhibit certain signs of structural atrophy, the principle has for a long time passed muster that the marriages of alcoholics are less fruitful than those of the rest of the community. A recent and careful work prepared in France has, however, proved the opposite fact by an examination of the conditions of 402 Parisian working-class and pauper families,

including 81 families of drinkers. According to that, drinkers have more children than non-drinkers. Strange to say they have more often multiple births, and strikingly more boys than girls. But they also have considerably more miscarriages, premature labours and dead children, the latter to such an extent that while they amount in drinkers to 5.2%, in non-drinkers they hardly reach 3%. On the whole 42% of drinkers' children die before they reach the first year, that is about 14% more than the children of other people.

The offspring of drinkers is therefore materially diminished at a very early stage, in spite of the original greater fertility of such persons.

An extremely high percentage turn out physically and morally deteriorated. Many large family-trees of drunkards have been published, which disclose a frightful picture of this degeneration in the offspring of drinkers. Quite recently *Aschaffenburg* has communicated such an example: Of 5 children of a drinker, 2 were healthy, 3 drank and died suddenly from heart-disease. In the next generation 3 were prostitutes, 1 a ne'er-do-well, 4 drinkers, 3 died early and only 5 were healthy. Still more terrible pictures are described by *Morel* and *Legrain* who believe in an almost regularly progressing degeneration of drinkers' families. They maintain that after some generations plagued by nervous and mental diseases, the race which consists finally only of imbecile, insane and convulsed persons, dies out altogether. These are gross exaggerations, yet what *Legrain*, *Demme* and many others produce as undoubted facts, must be taken quite seriously, for all observers have afterwards confirmed this. Only an insignificant number of drinkers' children are physically and mentally normal. 17.5% according to *Legrain*, 6.4% according to *Demme*, 11.7% according to *Demoor*, etc. Quite a special part is played among the physical degenerative forms in the offspring by the tendency to tuberculosis and to epilepsy, and among the psychical ones, by that to drunkenness, crime and imbecility. Thus *Arrivé* found tuberculosis in 10% of drinkers' children, but only in 1.8% among the children of healthy parents, and among the former 10% with nervous or psychical degeneration respec-

tively; *Grénier* found among those tainted with drunkenness only, 25% drunkenness and 27% mental disorders; *Sullivan* among the children of female drinkers, 4.1% epileptics.

More striking are the numerical proofs if we examine among drinkers, epileptics, idiots and criminals into the hereditary taint of drunkenness. Here there are so many investigations at our disposal that the results cannot possibly be enumerated fully, without becoming tiresome and sacrificing a great deal of space.

The numbers with regard to hereditary predisposition through drunkenness fluctuate in drinkers between 21.4 and 75%, in idiots between 14.1 and 65%, in epileptics between 7.9 and more than 60%, in young criminals between 23-50%. *Mönkemöller* found in the reformatory school of the town of Berlin, hereditary taint with alcoholism in 67.2% of all the pupils; *Schmidt-Mounard* ascertained that of 126 children placed in a school for backward boys and girls, 19% were descended from drunkards, and 14% from dissolute families. The drinkers' children, moreover, were those who learned with the greatest difficulty. Finally *Strohmayer* has very carefully and minutely studied the histories of 56 families suffering severely from nervous and psychical diseases, and found that in no less than 16 the original founders of the family as far as he could trace them, had been drunkards.

Overwhelming as these figures are, so it is difficult to interpret them.

In the first place one might think of the possibility that a race whose vitality has sunk below a certain level, decays and degenerates according to fixed laws; first one generation becomes alcoholic, then the next epileptic, and so on until the race has died out. In this way the alcohol would possess no causal importance at all in connection with the decline of the offspring. This assumption is in itself somewhat extravagant, and it is totally devoid of foundation. It is, indeed, an every-day occurrence that families become annihilated through psychical deterioration under quite different forms in which alcohol plays no part whatever, and it is not in the least possible to lay down a fixed law for this degeneration. On the other hand it would

be altogether arbitrary to maintain that, in every case where alcoholism of the parents has led to nervous decay in the children, the alcoholism has been the expression of a commencing degeneration of the race. For there are plenty of cases where the fathers who were free from hereditary taint and capable men originally, have become drinkers solely through their occupation or other accidental circumstances. *Bieraccini* has closely observed two such families, and every experienced family practitioner or alienist could furnish similar material from his own practice.

There is, further, another poison which, as we shall see in a subsequent chapter of this work, can bring about in the offspring of chronically intoxicated persons exactly similar conditions as alcohol—namely lead, and that surely does not play any part in the natural degeneration of families.

But there is something more. Cases are known where a diminution in the degree of drunkenness of the father was accompanied by a corresponding improvement in the hereditary predisposition of the children. Thus *Fournier* describes the family of a man who between the age of 20 and the early thirties, was addicted to heavy drinking, and who procreated during that period two severely degenerate and mentally backward sons, but who afterwards became less of an inebriate and brought into the world one child that was almost normal, and two who were perfectly sound.

It must therefore be concluded that alcoholism of the parents is bound to exercise some unfavourable effect upon the progeny.

Alcoholism is bound, where it has arisen on some decadent basis, to determine the degree and form of the future hereditary degeneration. Because the four special forms: epilepsy, idiocy, drunkenness and an early tendency to crime, appear in the children of drunkards undoubtedly far more frequently than in the offspring of other degenerates, say, of lunatics, neurasthenics, or hysterical persons. But where the drink-habit is purely acquired, it must be capable of exercising an immediate effect upon the physical and mental qualities of the children.

It is perfectly clear that we must deduct here many a thing

before we are entitled to speak of an hereditary influence in the narrowest sense, of an injury to the germ-cells. For drinkers' children are often subject to many other injurious influences, often from their very birth and occasionally even from their antenatal existence.

Nicloux has proved this in animals very distinctly. By introducing through an œsophageal sound alcohol into pregnant guinea-pigs, it was possible after 5 minutes to detect alcohol in the liquor amnii, the poison thus passing to the fœtus.

Laitineu accustomed guinea-pigs to alcohol at the beginning of their pregnancy, but discontinued the practice afterwards. The otherwise healthy young eventually proved to be more susceptible to diphtheria-toxin than the young of animals which were free from alcohol.

Mariet and *Combemale* made a bitch in the last weeks of her pregnancy drunk. She gave birth to 7 puppies of which 4 were dead, two healthy "but possessed of very little intelligence," and the last was physically and mentally backward. The offspring of this latter animal were, as we shall see later on, markedly degenerate.

With regard to the children of female drinkers we have already had something to say. It is, further, maintained that such children imbibe the alcohol along with their mother's milk, and that their vitality is thereby considerably impaired from the very commencement of their life. But this seems to be only rarely the case. *Rosemann* has demonstrated that the administration of alcohol to the mother neither alters the constitution of the milk in general, nor effects an entrance of the poison into the milk, provided the quantities taken are moderate. If the amount consumed is fairly large, only about 0.2 to 0.6% of the quantity taken passes into the milk. If a few observers maintain that children suckled by wine and spirit-drinking wet-nurses, develop convulsions on account of the quality of the milk, this assertion seems in view of the above results to be rather risky. In such cases the suspicion is more justified that the sucklings have had alcohol given to them in a more direct manner—besides, sucklings are in any case easily attacked by convulsions. On the other hand it is worth considering whether mothers who

are in the habit of taking larger quantities of wine or beer, say between 7 and 9 pints of beer or from 2 to 2½ pints of wine, while suckling their children, and who transfer thus to the latter about 1 gramme of pure alcohol daily, do not in this way cause injury to their offspring. One would think that just in the first months of their existence, it is dangerous for children as regards their subsequent development, to become accustomed to a powerful drug—be the single dose administered poisonous or not.

That the inability of the mothers to suckle the children at all, which is to the latter so full of danger, has some connection with alcoholism, is not improbable, though it can only be asserted with great caution. *Bunge* found, it is true, among a large number of suckling women 32% who were accustomed to alcohol, but among those incapable of suckling 65%, including 6% drunkards. He demonstrated further that women incapable of lactation are descended comparatively often from male or female drinkers. His statements are, however, in need of confirmation at the hand of a larger material.

Of greater seriousness are at any rate the other injuries which usually affect drinkers' children. Poverty and indigence often receive them on the threshold of their arrival into the world, their upbringing is neglected, because a disordered state of affairs prevails in their homes and often enough because the father dies prematurely. They are frequently ill-treated by their drunken parents, and in a specially hurtful way by blows on the head—on this account (presumably) *Mönckemöller* found in ⅔ of all the reformatory children scars on their heads. They are often almost forced into a life of crime, and encouraged from their youth to indulge in strong drink.

This last point is a particularly sad one. Children stand alcohol exceptionally badly, they acquire even if they are accustomed to only small doses of wine, beer, etc., all sorts of morbid defects such as indigestion with pronounced swelling of the liver, they become adipose, and suffer frequently from severe nervous symptoms. A recent investigator claims even to have ascertained by careful calculations that the brain of children accustomed to alcohol is in all its diameters by 8.12% too small and that their increase in weight amounts to only 60% of the aver-

age. That the mental development of alcoholised children suffers severely is beyond all doubt. And now let us bear in mind to what an extent habitual drinkers, out of sheer heedlessness or from a rough enjoyment of everything coarse and incongruous, encourage (often even among the "better classes") the consumption of intoxicating liquor by children. Thus *Kassowitz* saw an 8-year-old child of a drinker which had received daily two glasses of wine at mid-day, and a glass of beer and a glass of wine in the evening, develop, in the course of a pneumonia, genuine and unmistakable delirium tremens, and the same thing, with a fatal result, in connection with influenza, in a boy of eleven, the son of a publican, who was equally accustomed to large quantities of wine. In the child of a spirit-vendor which was fed with brandy, the liver became so enormously swollen that it filled half of the abdominal cavity. Such an encouragement of children to take drink does not, however, occur only in isolated depraved individuals but among large sections of the population which are saturated with alcohol. A striking example is furnished by the home-workers in North Bohemia who are given to alcoholism through hunger and poverty and who are in the habit of feeding their infants with a soup made of brandy and bread or potatoes, to make the poor babies sleep all day so as not to disturb their mothers from their work.

It is not therefore necessary that what moral depravity and what bodily and mental disease befalls the children of drinkers, must absolutely be due to an hereditary disposition. But that there are very many such children which bear from their birth physical signs of degeneration, can also not be the result of the treatment which they receive, for there are plenty of cases where for instance children of drinkers become epileptic without imbibing alcohol themselves and without receiving blows on the head. Some injury or other must consequently be transferred to them directly by their alcoholic procreators.

This "something" is explained in different ways. Some believe that the entire organism of the procreator is so weakened by the poison that he can produce only weakly descendants. Others say that the poison accumulated in the body of the procreator, acts directly on the germ plasma of the sperm or of the

ovum which is intended to form part of the body of the offspring. The difference is very considerable, for the germ-plasma remains continuous from generation to generation, and it is highly questionable whether it can get over an injury completely. If alcohol has therefore attacked this germ-plasma, the probability ensues that the future generation will be of a deteriorated kind, that they will bear a curse of which they can never get rid. The latter view is most likely the correct one.

It is certainly very plausible that alcoholic infirmity, like all other infirmities, diminishes the prospects of a healthy offspring. But this would explain in the first instance not the peculiar effects of alcohol upon the welfare of the children, but only the influences which it has in common with injurious agencies.

There are, besides, cases in which body and mind of the alcoholic himself offer to the poison a wonderful resistance, regular arguments in the hands of those who oppose every movement of an anti-alcoholic nature, but where the progeny nevertheless undergo a rapid process of annihilation. Thus the case of an American farmer was recently reported who had remained hale and hearty, in spite of his daily consumption of nearly a pint of brandy, up to his 91st year. But of his 7 children, two died in childhood, one became epileptic and died in his 15th year, one is feeble-minded, one suffers from chorea, one is careless and given to drink, and the seventh is passionate and a vagabond. A case of a similar character though not quite so striking is known to both of us.¹

It has been attempted in two different ways to solve the problem of the immediately deleterious influence of alcohol upon the quality of races. First, by experiments on animals.

Of great value are in this connection the observations which

¹Translator's note: I cannot resist the temptation of mentioning here the case of a patient of mine, a gentleman of education, who occupies a very important position. I have attended him for the last ten years for chronic alcoholism and its consequences, which have only recently commenced to trouble him seriously. The quantities of alcohol he consumes are simply phenomenal, and no matter how much he takes—sometimes as much as a whole bottle of Scotch whisky—he has never absented himself from his work or been drunk in the real sense. When he feels bad, a stiff dose (as he calls it) soon puts him right, though he knows that he will feel worse afterwards.

have been made with reference to the physically and mentally backward bitch that had already been intoxicated with alcohol while yet in her mother's womb. (See above.) She was allowed to grow up free from the influence of alcohol and to pair with an abstinent healthy dog, nevertheless the whole of her first litter of puppies was worthless. One of them had club-foot, cleft palate and twisted toes, one a patent ductus Botalli, one developed muscular atrophy in its hind legs. *Hodge* paired alcoholised dogs and obtained a brood which was epileptic, stupid, snappish or dwarfish.

The other method of investigating whether the alcohol consumed by the procreator exercises an immediate toxic effect upon the germ-cell is to examine into the kind of children procreated by otherwise healthy parents while in a state of acute intoxication.

That such children are dull and of reduced value was believed already by the ancients, and this view is also at the present day shared by popular tradition. That it is correct *Bezzola* has proved in a characteristic but indisputable manner. He has first of all ascertained the birthdays and thus the approximate periods of conception of 68 imbeciles in the wine-growing district Graubünden. Next he calculated how many births take place on an average every month. The result was that half the number of imbeciles had been conceived at about the period when most drinking takes place, namely at New-Year, during Carnival time and when the grapes are gathered. After that he investigated how matters stand with regard to a material of many thousands of imbeciles from the whole of Switzerland which country is wine-land to some extent only. Here also it turned out that the imbeciles-chart began to rise above the normal chart in January, that in February (Shrove-tide) the number of imbeciles who

He complains principally of gastro-hepatic troubles and neuritic pains, but his vital organs with the exception of a slight enlargement of the heart are sound, and he only rarely shows signs of albumen in the urine. He is rather reticent on personal matters, but I understand that he is a widower, that he has lost one or more promising sons, all the family he had, though he comes of a long-lived stock. His age is about 70, and except when under the immediate influence of alcohol, he delights in discussing political and similar matters.

must have been conceived at that time increased suddenly, without there being a simultaneous increase in the number of births. April, May, June (wedding-months) brought a common ascent in both charts; July, August, September, showed a retrogression which affected principally the imbeciles-chart (plenty of work and few holidays!) In September the imbecility-chart stands far below the general chart—then it rapidly rises again in October (the time of vintage) considerably above it, to sink afterwards quickly—again till January.

At the discussion on this interesting communication at the Vienna Congress against alcoholism a medical man said that the teachers in wine-growing districts of lower Austria know that a material of very bad scholars in any one year denotes a good vintage 6 years previously.

It was necessary to dwell at some length upon these details, for it is practically of the utmost importance that alcohol can exercise its poisonous effect upon the offspring direct by the intoxication of the germ-cell and without impairing the paternal organism. The foregoing facts will in other ways, too, furnish an appropriate object-lesson as regards the consumption of alcohol by married persons.

Our last researches, however, impel us to go a step further in the consideration of the relations between marriage and alcoholism. The more regard we pay to the offspring in its most distant generations the more we are reminded that marriage is not a private affair of many single individuals, an arrangement for the fulfilling of the definite desires of each separate man or woman. Rather must it be regarded from the point of view of an institution which, while making the perpetuation of the species dependent upon definite material considerations, provides at the same time for the self-preservation of the races and nations.

Influence on the race.—The question therefore arises: How does the intrusion of alcoholism into married life agree with the race-preserving and race-promoting object of marriage?

Is a certain number of alcoholic marriages to be regarded as an essential factor in the anticipated or already present decay of the race?

Racial biology is a young science and it cannot yet offer in every department imposing experimental figures. For this reason it is not in a position to supply very many indisputable proofs of the race-deteriorating effect of alcoholism.

We do know that in the case of savage nations which give themselves up without discrimination and without restriction to intoxicating liquors, the injuriousness of which is unknown to them, this is looked upon by universal consent as the main cause of their annihilation. But this presupposes conditions which do not apply to civilised peoples. In the latter the circumstances are very unfavourable to the practical demonstration of race-deterioration through alcoholism. It has been pointed out that the increase in the consumption of alcohol is accompanied by a somewhat corresponding increase in certain countries in the number of persons unfit for military service. Retrogressions in the average height have been observed among certain classes of the population and attributed to the drink-habit. But this is no proof, for it is quite arbitrary to select just one of the many injurious agencies which affect civilised mankind in order to explain a particular phenomenon. Such a proceeding is the more uncritical as the explanatory alterations, for instance the diminution in the average body-height, is in itself no proof of the deterioration of the race. Nor is there much evidence that alcohol is injurious to the race, in the fact that certain nations which do without alcohol (the Tartars in Russia) are perfectly healthy and able-bodied. What we might, at the most, make use of is *Gyllenskiöld's* statistics according to which the number of persons rejected as unfit for military service in Sweden on account of weakness and shortness of stature, has up to 1840 increased steadily, but decreased step by step since 1851 and principally from 1860 to 1868 (the statistics do not go further). As the temperance movement began in Sweden about 1830 it is at all events not impossible that the improvement in the military fitness is due to a diminished average intoxication of the germ-cells of the persons conceived in the subsequent years. But then, it is just as possible that the latter have, on account of the better conditions created by the reduced alcoholism of their parents and among which they have grown up, developed into stronger men.

The difficulties to obtain data that are more certain in their interpretation are enormously great. Until racial biology will have conquered them we must derive what help we can from theoretical considerations.

But all at once we have investigators coming upon the scene with an assertion which is plainly contrary to the view that we must anticipate from alcoholism an injurious effect upon the welfare of the race. Proceeding from the standpoint that only biologically degenerate individuals, such as those who are hereditarily tainted, sickly or feeble, are bound to fall victims to alcoholism, they welcome the latter as a benefactor to the race, inasmuch as it tends to eliminate those elements which are incapable of sustaining the struggle for existence.

That the premiss is wrong we have already seen. Daily experience teaches us that an endless number of capable and useful members of society fall victims to alcoholism, and we only have to look at the occupation statistics to see how great a part accident plays in this connection. If there are so many brewers and publicans (see above) among those who succumb to the effects of alcoholism, it can hardly be supposed that this is so because these trades attract swarms of persons that deserve to be annihilated. Besides, it is utterly wrong to assume that alcoholism, even in its severest forms, destroys the races attacked by it within a few generations. For as a rule alcoholics marry non-alcoholic wives who bring into the marriage healthy germ-plasma, and more or less sickly children spring from such marriages according to the mixed proportions of the paternal and maternal heritages. These children again propagate themselves further, they again mix with fresh blood and again impart through the germ-cells a drop of poison to their offspring. Some of the branches decay and die, others thrive and sprout, the offspring of healthy ancestors mingle with them, and thus widely-spread generations arise which though they are not so deteriorated as the first alcoholic family are, nevertheless, not so pure and perfect as a race without any alcoholic ancestors at all. If at the end the number of alcoholists among the ancestors of a living generation is so great that their descendants are in excess, the result is bound to be a degeneration of the race.

Combating of the injuries arising from alcoholism during married life.—Having now exhausted the material of facts relating to the connection between marriage and alcoholism we have yet to supply an answer to the question: How shall we regulate our medical conduct in the face of all these facts?

Prevention of marriage in existing alcoholism.—The first principle to lay down is: The doctor must endeavour to prevent every marriage with a male or female alcoholic.

The whole sum of misery which results from such marriages with a great degree of probability is sufficient to justify this stringent demand. That marriage is beneficial to some who have become alcoholic from purely external causes, is of little importance compared to the enormous risk which accrues to the other partner. No one can guarantee that the man who has had recourse to drink, because he was uncomfortable in his lonesome domesticity, will feel more comfortable when married, or that the young "rake" will turn out a steady husband and father. Who can say with certainty in any given case that the alcoholism has not already gone so far as to amount to a morbid craving for drink? He who has sunk from carelessness or other external motives into a moderate degree of alcoholism must show, before he marries, that drinking has not become to him an insuperable necessity. He must live for some time without alcohol and thus simultaneously detoxicate his body as much as possible, which would avert an after-effect of his former injurious habit upon his first descendants as far as practicable. Those who have become drinkers from a morbid inclination or who have already developed through drink permanent psychical or organic disorders are no fit subjects at all for matrimony. These are the principles by which we medical men have to be guided in estimating the marriageableness of drinkers. We need not be afraid that we shall thereby shoot beyond the mark. As it is, there will be plenty of cases where the advice of others in a contrary sense will prove victorious.

But we also have to advise how one partner can recognise beforehand the alcoholism of the other, which, it must be con-

fessed, is often very difficult. It is a good thing that the custom is becoming more and more general for candidates for marriage to insure their lives. Advanced alcoholism is not overlooked at the necessary medical examination and the consequent rejection gives a valuable indication. Very often, however, alcoholism is not objectively sufficiently obvious and in such cases the obtaining of the insurance policy may give rise to a feeling of false security. The same thing applies to a special examination by the family practitioner. The best remedy is that which is ethically of most value: that people should marry each other when they are intimately acquainted and not on account of an inclination of short duration or soon after an introduction by a matrimonial agent.

But is it not the business of the State, the interests of which as we have seen, suffer in various directions from the effects of alcoholic marriages, to make such marriages impossible? And are there not State-institutions for this purpose?

Placing under tutelage on account of inebriety.— Both these questions are to a certain extent answerable in the affirmative. Germany possesses a law which enables the prevention of alcoholic marriages or at any rate their restriction. Paragraph 6, Sub-section 3, of the German Civil Code (*Bürgerliches Gesetzbuch*) says: "A person unable on account of inebriety to manage his affairs, or exposing himself or his family to the danger of destitution, or endangering the safety of others, may be placed under tutelage."

As the person thus situated is in the same position as a minor, he cannot contract marriage without the consent of his guardian.

And yet, although this law has been now in force for years, placing under tutelage because of inebriety has so far occurred very rarely: in the whole of Germany, according to *Endemann*, 852 times in 1901, and 903 times in 1902.

At the same time, as this author adds for the sake of comparison, 783 persons died in Germany in 1899 from delirium tremens alone, while 21,361 persons were maintained in the same year in German asylums and hospitals on account of alcoholism. These figures are, however, far from giving the real

number of severe alcoholics—they could be amplified by returns from prisons and workhouses, and a quack who offered for a single payment of ten shillings a remedy against drunkenness made in one year £15,000.

There are several reasons why only so very few drinkers are placed under tutelage. In the first place there are as a rule no prosecutors.

The relatives are afraid of the inebriate or do not like to expose him in public, the public prosecutors are not in a position to initiate a prosecution, and the poor-law authorities and communities who have in the most important German States been entrusted with this right do not make sufficient use of it. Their point of view is that the placing under tutelage of a drinker does not *eo ipso* diminish the expenses which he causes to the poor-law authorities. But they forget that this proceeding, regarded in the case of unmarried drinkers as a marriage-obstacle, can reduce these expenses materially. For in such a case it is only single individuals who become, when sick or poor, a burden to the rate-payers and not whole families. Communications in this direction are particularly instructive, as for instance that made recently by *Putter*, the former manager of the Halle poor-law institution. Take an example: An able-bodied working-man became tired of work and gave way to drink, the whole of his family sank morally, three children were sent to a reformatory, and three others who were feeble-minded to a children's home. So far this marriage has cost the poor-law authority in 7 years £285. These are regular experiences, and by far the most serious cases from the point of view of the offspring are those where the alcoholism begins at an early period and frequently before marriage, which happens in hereditarily-tainted or mentally deteriorated drinkers. This is distinctly seen in the material of youthful criminals at the Moabit gaol.

Here we have at least a nucleus which by a judicious appreciation by the State and the communities is capable of developing into a means for preventing alcoholic marriages.

It were also desirable that public prosecutors should have the right to institute proceedings with a view to placing a drinker under tutelage. In this way cases of alcoholism would be in-

cluded under this category which do not otherwise come to the knowledge of the poor-law guardians, cases in which the inebriety has not yet produced a reduction in the earning capacity, but which manifest themselves by offences and crimes. It was surely exaggerated fear on the part of the legislators that the public prosecutors would employ this power as a weapon against political undesirables. The minutely prescribed legal preliminary conditions in tutelage cases constitute a sufficient safeguard against such a contingency.

Round the expression "inebriety" contained in this law, a veritable battle sprung up which has, unfortunately not without the fault of the medical profession, ended in a regrettable manner. Science includes to-day under the term "inebriety," only a condition in which the drinker has morally sunk to such a level that he is no longer capable to withstand the craving for alcoholic liquor, in other words a genuine mental disorder, similar to that of morphinism. *Planck* has, in his commentary to the German Civil Code, applied this point of view to § 6: "The expression seems to denote that a morbid condition is necessary, in consequence of which the person in question has under ordinary circumstances no longer the power to resist the desire for an excessive consumption of intoxicating drink." The same standpoint is taken up by the Reichsgericht in a decision of October 27, 1902.

It is, however, certain that the preamble of the *Bürgerliches Gesetzbuch* when submitted to the Reichstag knew nothing of such a scientific limitation of the term "inebriety," which is in its popular meaning by no means so circumscribed in its application. For it points out distinctly that the tutelage shall no longer be instituted as under the former law, only when the inebriety has led to mental disease. It therefore does not regard inebriety as such as a mental disease. Similarly the Reichsgericht has on another occasion (judgment of the 4th Civil Senate of June 5, 1902) emphasized the justice of regarding drunkenness as such as dishonourable and immoral conduct, and this is also stated distinctly in the preamble of the *Gesetzbuch*. But then a craving which rests upon mental disorder can never be "dishonourable" and "immoral."

And where does such an application of a purely scientific term to a law which intended something else, lead us? To the conclusion that the judge must refuse the institution of the tutelage on account of drunkenness, if the drinker proves that he can control himself, that it is not yet insuperable disease which makes him indulge freely in alcohol, but mere recklessness and a low character. *Endemann*, who has gone into this matter with a thorough acumen, gives actual examples of this kind. It amounts to this, that a man who in point of fact gets inconsiderately drunk every minute, who endangers seriously the public safety, who lets others work for his support, has only to show that he can be sober for eight days once in a while—and it becomes impossible to place him under tutelage, he may then go on drinking and doing mischief until he has gone so far that he is really unable to do without drink. One of us is acquainted with the case of a lady belonging to the better classes, who was for 10 years so much addicted to drink that she showed already albumen in the urine and was by one or two specialists on account of severe nervous troubles in the pupil and the tongue suspected of being paralytic. She neglected, being a rich widow, the education of her children. Matters becoming serious, and one of her relatives instituting an action to have her placed under tutelage, she placed herself under treatment in an institution where she managed to abstain from drink for several months which were given her by the court as a period of probation. The moment she was sure that the application against her had failed, she went with a younger son to a wine-restaurant to make up for lost time.

This view being the prevalent one on the point it would seem that a special inebriety-paragraph is quite unnecessary as in those cases where drunkenness has led to mental disorder, tutelage could be obtained on the grounds of mental weakness and in the cases where there is an advanced dissolution of the moral personality, on the ground of "insanity."

Of course, it would be very nice if legislation were to adapt itself always to the exactness of scientific nomenclature. But often enough the conceptions which science associates with certain expressions handed over from generation to generation.

alter in the course of a few years, whereas laws are supposed to remain in force at least for decades. We doctors have not always shown ourselves so jealous in guarding the purity of medical terms, and particularly not with reference just to this § 6 of the *Bürgerliches Gesetzbuch*. On the contrary, we have succeeded in having the expressions "feeble-mindedness" and "insanity" interpreted by the courts not according to their medical meaning but according to the legal one given them by the laws. We might do this just as well as regards inebriety and place it in this case on a par with "chronic alcoholism."

Abuses can be avoided, seeing that it is not possible to place under tutelage all drinkers or alcoholics respectively, and that it is necessary to prove the actual existence of all those preliminary conditions which we have already mentioned and which are very numerous. First of all, the individual in question must be incapable of managing his affairs, that is the totality of everything that concerns him. He may yet, for instance, be capable of exercising his employment, or of fulfilling his duties, the law permits him to do that—with the consent of his guardian—even after being placed under tutelage. But he must not be incapable of transacting certain definite actions only. Or else he must show by his conduct that a continuation of his drinking habits will sooner or later bring him to material destitution. Or finally, it must be proved that his general behaviour is so bad as to endanger the safety of others.

Endemann would like, so that misunderstandings such as those which have already arisen should be avoided in the future, to see the law altered as follows:

"A person may be placed under tutelage if in consequence of inebriety, he is unable to conduct sensibly the sum total of his affairs, or if, as a result of drunkenness, he exposes himself or his family to the dangers of destitution or if he endangers the safety of others."

The distinction of the inebriate, as one who can no longer give up drinking and is consequently unable to look after his affairs, is here perfectly correct. But it seems inexplicable why

in the other two clauses only the "drunkard" is mentioned. For *Endemann* himself chooses the expression "drunkenness" for the beginning stage only, in which the drinker is still responsible for his actions (for his drinking and the results arising therefrom). The expression is in itself very well chosen: he who is in the habit of drinking much, out of carelessness, love of pleasure or from other non-morbid causes involving guilty negligence or a bad disposition, is a drunkard (*trunkfällig*); he who cannot help it, but feels that he must drink, is an inebriate (*trunksüchtig*). But the risk of destitution and the endangering of others is common in both of them alike. It should therefore be stated in the above emendation: ". . . or if as a result of inebriety or drunkenness he exposes himself . . ."

When the *Bürgerliches Gesetzbuch* and the *Civilprozessordnung* (procedure under the civil law) will contain the extensions advocated here relating to placing inebriates under tutelage, it will be possible in cases of alcoholism that have advanced to a particularly serious degree, to put in the way of the alcoholic a stringent marriage-obstacle. It would then, of course, be the business of the respective courts of justice to see that this marriage-obstacle is carried into practice in a proper and settled manner.

Of other than German laws that of British Columbia goes furthest of all: "Every person who is proved to be addicted to drink, shall forfeit the right to manage real or personal property or to dispose of the same." In Norway the regulations regarding the placing of drinkers under tutelage lay too much one-sided stress upon acute intoxication as a constituent part of alcoholism, as they speak of a "tendency to drunkenness"; at all events they are more unequivocal than the German ones. In the town of Basle inebriates may be placed under tutelage if they constitute a public nuisance. Most countries, however, have as yet no law at all permitting the placing of inebriates under tutelage, and none goes materially further in the matter than we have suggested above.¹

¹Translator's note: The English law knows no such proceeding as

Radical prohibition of marriage.—In fact, it is not in our opinion, the business of the State to go much further. Were we, in some way or other, intent on prohibiting the marriage of every alcoholic, say, by a law to that effect, what measures would it be necessary to adopt for the purpose of finding each one out! A medical examination of all candidates for marriage might have the result that so and so many would be wrongly declared as alcoholics, while the greater number of the real alcoholics would never be detected. Because the physical signs of medium degrees of chronic alcoholism are not yet as a rule clearly marked at the average marriageable age, and the psychical changes are not recognisable by a single medical examination even in advanced degrees of the intoxication, especially if the examining physician is not an expert in mental diseases. There would consequently remain nothing else but a system of espionage, which would do far more harm than good. Judicial errors innumerable, a demoralising class-war, mistrust on the part of everybody against everybody else, would be the regular outcome of this. Particularly must we object against and discourage every attempt to make alcoholism a notifiable disease. For the more such notification-duties are thrown upon the shoulders of the medical profession, and especially with regard to diseases which are considered odious, the fewer people affected with such diseases will present themselves before a doctor. The latter would lose his status as the confidential adviser of the public, and instead of being useful to

"placing under medical care on account of insanity." The nearest approach to it is the former system, "de lunaticis custodiendis" by a "Warden in Lunacy." If the patient is found incapable of managing his affairs, then, according to the Lord Chancellor appoints a "committee of the person" to see to his custody and proper treatment and a "committee of the estate" to look after his property. In Scotland the Court of Session appoints a "Tutor to the person" who takes charge temporarily or permanently of the person and the estate of the patient. The Scotch law also knows a proceeding called "interdictum" which is a restraint applied to landlords and others who treat a drunken, disorderly or otherwise bad as an imposition.—In America the law is mostly derived from the English sources, but the procedure is regulated by statutes in the different States.

the State as a detective, he would be deprived of the possibility, which he possesses at present, of preventing evil by timely advice. There are limits even to the power of the State, and much as we sympathise with the struggle against the injurious effects of alcohol, we cannot look upon the whole world from the one-sided point of view of alcoholism.

Prevention of alcoholism during marriage.

—The prevention of alcoholism during married life must be attempted according to the same principle as that of alcoholism generally. We need not therefore waste many words, nor can we go here into the controversy whether abstinence or moderation should form the guiding factor. Our personal standpoint is, that total abstinence from alcohol can certainly never do any harm, but that an occasional moderate use of it is capable of causing permanent injury to an insignificant minority only. Besides, we know from an experience which is thousands of years old, that humanity has in addition to real food always needed and employed nervine stimulants, and it is very much a question, if it were possible to abolish alcohol, whether other and more dangerous excitants would not come into general use by those who are easily given to excess.

The enemy whom we fight is habitual, steady drinking. The daily consumption of intoxicating liquor, even in comparatively small quantities, is always serious. For the damaging effect upon the working ability of a man, which commences after the smallest dose of alcohol, may last from 12 to 24 hours, so that the next slight intoxication can sometimes set in before the preceding one has ceased. This is the more to be apprehended, as these toxic actions of a lower degree cannot subjectively be felt at all by the individual in question. The self-deception which leads in such cases to the imagination that good has been derived and not an injury, is not a guilty but a natural and unavoidable one.

And there really is in a well-regulated household nothing more superfluous than the habitual consumption of beer or wine at meal-times. Well-cooked and nourishing food does not thereby become more appetising or palatable—quite the reverse. On the other hand it must be conceded that a judicious and suit-

able preparation of the food is one of the most necessary measures in the fight against alcoholism.¹

We consider it advisable that those who take every day regularly small quantities of alcohol, should now and then voluntarily impose upon themselves an abstention-period of some weeks' duration, so that they may find out whether and to what extent alcohol has gained power over their tonicity.

What must be particularly warned against, is the performance of sexual intercourse while in a drunken or semi-drunken condition, as the constitution of the eventual offspring suffers thereby materially. For the same reason pregnant women must be exceedingly cautious as regards the consumption of alcohol. During the lactation period the excessive use of alcohol must, of course, be prohibited, not excepting "roborating" strong wines and beers. A very careful administration of harmless spirituous liquors, such as beer and eggs, beer-soup, etc., is in most cases free from untoward consequences.

With the exception of acute diseases and unless specially indicated, it is best for children under 14 years of age that they should never be given any alcohol. If they are on special family occasions permitted to sip from a wine or beer-glass, they should be distinctly told that it is a very rare and great exception. They will understand this most easily where they see their elders also indulging in the luxury on rare occasions only.

Cure of alcoholism.—Where a married individual has fallen a victim to alcoholism, it is the doctor's duty more than with any other alcoholic to urge energetic measures before the intoxication has assumed higher degrees. The only remedy which is of any good in this disease as such, is notoriously the complete and permanent abstention from alcoholic drink of any kind. The change to this abstention is however to an alcoholic

¹Translator's note: Looked at from this point of view there is every justification for the unremitting efforts of the education authorities to impart to girls a thorough knowledge of cookery. Unfortunately, however, we see that the consumption of alcohol has gone up in France in spite of the notorious culinary abilities of the French housewife.

exceedingly difficult of accomplishment, the more so as his psychical energy, his firmness of character, has already undergone a deterioration. In most cases it is necessary for such an alcoholic who desires to get rid of the habit, that he should find himself in the company of people who do without alcohol, and that at first he should be under constant control—in other words he needs a somewhat prolonged stay in a home for inebriates. The necessary separation from the married partner for a time to be reckoned at least by months, possesses in the case of families which dispose of the requisite means of support in the absence of the bread-winner, only one advantage, it prevents the procreation of further imperfect children from intoxicated germ-cells. We often see the waning married happiness of such a family flourish again after a separation of this sort—but so far it is unfortunately given to very few people to be so favourably circumstanced as to be able to undergo a cure at some institution, without having to trouble about the material position of their dependents.

Apart from those persons with small incomes following some employment on their own account who are not insured against sickness of any kind and who are hardly in a position to pay for their own keep at the home and for the support of their families during their absence, it is principally three classes of individuals who come here into consideration, viz.: those in the civil service, those entitled to superannuation, and those who are members of some sick-club or are otherwise insured against illness.

As regards the first, the circumstances are apparently favourable, as their salaries continue to be paid during sickness and there is, besides, the possibility of help from public funds for purposes of treatment considered medically necessary. But just in alcoholism they easily lose these advantages for various reasons.

The persons falling under the law of insurance against sickness receive, in so far as they belong to communal sick-clubs, and in agreement with § 6, Clause 32 of that law, if they are unable to follow their employment, from the third day after the beginning of the illness for every working-day a sick allow-

ance amounting to half the customary wage of ordinary day-labourers, and this continues in accordance with the modification of the above-mentioned law which came into force on January 1, 1904, for 26 weeks, this being in addition to free medical attendance. In the place of these payments may be substituted, according to § 7, free treatment and maintenance at an hospital. In addition to this last benefit, there is payable for or direct to the relatives of the patient, if there are any whom he has hitherto supported out of his earnings, a sum equal to half the amount fixed by § 6 as sick-money.

In local sick-clubs the benefits granted are sometimes greater still. The sick-allowance is calculated according to the average wage of the class of workmen represented in the club up to a maximum of 3 shillings daily, and it may be increased to $\frac{3}{4}$ of this average wage. An allowance may further be granted to convalescent patients from the time the sick-allowance ceases, for a period of one year. (§ 20 sq. of the above-mentioned law.) This applies also to industrial building and guild sick-clubs.

All these regulations apply no doubt to alcoholics and to inebriate-homes. For a chronic intoxication is under all circumstances an illness, and homes for inebriates are hospitals. The clubs are therefore entitled to suitably maintain alcoholics for 6 months and to grant to their families during the same time an allowance which is unfortunately in most cases totally inadequate. Local sick-clubs may even extend their support of convalescent alcoholics for a year longer, though they cannot do the same thing with regard to the families.

On the contrary, these benefits to the families are capable in virtue of §§ 6a, 26a, etc. of the above law, of undergoing material curtailment; if the disease has been occasioned by "drunkenness," the statutes permit a reduction in or refusal of the sick-allowance.

We have already dealt above with this term "drunkenness" (*Trunkfälligkeit*) as we interpret it.

Curiously enough *Endemann* explains drunkenness—and this contradiction with his statements as mentioned above is rather difficult to understand—not as a habit or as a series of

wilful acts, but as a "condition." He wishes to apply the expression in those cases "where in consequence of the intolerance against alcohol or of the chronic alcoholism (habitual drinkers) the typical signs of the normal or mental decay have made their appearance, no matter whether it is possible to ascertain a well-marked form of cerebral disease or not." But this cannot apply to § 6a etc. of the law relating to sickness-insurance. Because while this paragraph obviously embraces only cases of conscious guilt (fights, premeditated self-injuries), such a condition as the one described by *Endemann* may very well happen without conscious guilt. If, for instance, a man gradually becomes bodily and mentally infirm through the effect of alcohol, although he does not drink more than is usual among men of his class (brewers, waiters) or in the locality where he lives, and he is not warned by anyone that he ought to drink less, it cannot be said that that man is consciously guilty. On the other hand the definition of the term drunkenness which we gave above, namely a negligent habituation to excessive consumption of alcohol, agrees with the spirit of this law as well. But in order to exclude every doubt it would be better if the paragraph in question which speaks indeed also of "guilty participation in fights" etc. were to contain the expression "negligent drunkenness." Better still it would be if the whole clause were left out. For it hinders chiefly the cure of married drinkers or it robs their families of a part of the benefit which that cure would bring them.

Those married persons who fall under the law relating to superannuation-insurance are, if they are attacked by alcoholism, comparatively in a better position as regards their treatment.

According to § 18 of the law of July 13, 1899, the national insurance-office is entitled, in the case of diseases which give cause for apprehension that disablement will result, to institute the necessary treatment for the prevention of that disablement. If this takes the form of an abode in some hospital or institute for convalescents, an allowance must in every case be paid to the relatives. The latter amounts, if the insured person has hitherto been under State-insurance against sickness, to half the sum of the former sick-allowance, otherwise to a

quarter of the locally customary daily wage of ordinary day-labourers. In the same way the insurance-office may in the case of an existing disablement in the sense of the superannuation law, permit treatment to be undertaken if it promises to bring good results. The same allowance is then due to the relatives or the annuity becomes payable to them instead. Alcoholism does not occupy here any special position (there is only one single regulation which we shall mention later on, and which might be regarded as an exception to this principle). Thus the superannuation-law appears in this respect the wisest of all the social laws. For all the penalties in the shape of money or money's worth which affect the alcoholic, injure an innocent family and the community which is always interested in the cure of drunkards.

It is not always—in fact it is only in a minority of the cases—that the drinker possesses the insight to place himself voluntarily under institutional treatment. The possibility to force him to do so, is for the present very limited.

Generally speaking it would appear at the first glance that the placing under tutelage can be made use of in this direction, seeing that a guardian can fix the residence of his ward. But in the first place it is legally questionable whether this relates also to the stay at an institution and secondly no assistance can be expected from the police in having a drinker removed to a home or retained there. Among German States it is only in Saxony that a general order to that effect has so far been issued to the police authorities. The threat of proceedings to have him placed under tutelage is perhaps more likely to induce a drunkard to permit himself to be taken to a home.

Social laws regard, moreover, a compulsory detention at some establishment in various ways. According to the law on insurance against sickness, the sick insured may be handed over to an hospital, independently of his consent, even though he be married, if he transgresses repeatedly against the regulations issued in virtue of the above-mentioned § 6a, a contingency which is observed oftenest in drinkers, or if his condition or conduct necessitates a continued observation, a circumstance which always applies to alcoholism. The superannuation in-

surance-law, however, does not permit such a compulsory treatment of every married insured individual without exception.

On the whole, the possibilities of compulsory removal of a drunkard to a sanatorium do not correspond with the necessities of the case. Alienists and lawyers are therefore unanimous in demanding a law dealing with inebriates, such, for instance, as has been in force in England for years. Two things ought to be made possible: first that definite sanatoria, erected eventually by the State, should have a right to detain—compulsorily if necessary—those drinkers who have of their own free will sought admission into them during the whole of the fixed and lengthy period for which they undertook to remain at the establishment when they were first admitted; and secondly, that drinkers, even though not under tutelage, should under certain circumstances be removed compulsorily to such establishments and detained there until they are cured.

Prevention of the perpetuation of alcoholics continuing their married life. — Permanent alcoholism of a considerable degree in a married person demands in every case the prevention of the perpetuation of the decayed race.

Rüdin, at last year's International Congress against Alcoholism, suggested, while advocating the prohibition of marriage of alcoholics in general, that individual drinkers might be permitted to marry on the condition that they consented to the ligature of their spermatic ducts. He recommended further, preventive sexual intercourse and artificial abortion under proper medical precautions.

Bold and far-reaching as these proposals are, they deserve neither the indignation nor the cheap sneers which they have encountered in various quarters. The danger of alcoholic marriages as regards the future of the nations is a very serious one, and every proposal with a view to abating it, requires careful consideration. But we have already stated that as far as legal enactments are concerned, more harm than good might easily arise in other directions. To prevent by law alcoholics from marrying, as a matter of principle, seems to us to be impossible, and among the severe cases of alcoholism, again, in

which marriage might, by extending the existing laws, be prohibited, exceptions in the sense of *Rüdin*, will only be found with great difficulty. To make a bodily mutilation the preliminary condition of a civil right—such a thing could not be constitutionally carried into practice by any State governed by a parliament, and limited attention as we need otherwise pay to the argument “that a certain measure is opposed to the feelings of the people,” here it would apply in the fullest sense.

To the recommendation of preventive sexual intercourse in alcoholic marriages we may well give our support, provided it does not involve injury to health. An interruption of the pregnancy in severe alcoholism of the procreator, is at the present time altogether out of the question. An interference with natural processes with the object of bringing about a breed-selection in the human species, still meets as a rule the fiercest opposition. We still consider generally the sacrifice of an unborn human life justified only, if we can save thereby another human life. And yet, if we remember that we are not on principle so averse to the killing of people for the sake of the community—to mention capital punishment and war as examples—we must acknowledge that a generation will probably arise some day which will approach without fear of revolutionising its ideas of morality, the question of the killing of the embryo for the benefit of the race and of the nation.

The second step for the prevention of the evils resulting from the alcoholism of a married individual, is the separation from board and bed (*mensa et toro*). Where it cannot be arranged by a mutual friendly understanding, it may, perhaps under certain circumstances, be accomplished by placing the person concerned under tutelage. In such a case the guardian has a right to fix the place of residence of the individual over whom he has charge, and he may, if he considers it necessary, choose one away from the wife. But it is not, of course, in his power to prevent the couple from having intercourse with each other, if the wife claims the right which she possesses.

Dissolution of the marriage.—Finally, the conjugal partnership may be dissolved legally under the same conditions as it is done in divorce.

But before going into the subject fully we must mention two other forms by which the nuptial tie may be undone. They are contestation of the marriage, and the declaration of its nullity. The following paragraphs of the *Gesetzbuch* apply in this respect:

"§ 1331. A marriage may be contested by the married partner who was at the time the marriage was contracted, or in the case of § 1325 (see below) at the time it was confirmed, not fully at liberty to enter into any contract, if the contraction or confirmation of the marriage has taken place without the consent of the legal representative."

"§ 1333. 4. Marriage may be contested by the married partner who was at the contraction of the marriage mistaken in the person of the other married partner or as to such personal qualities in the other married partner as would, had he possessed a knowledge of the real state of things and a proper appreciation of the essence of marriage, have deterred him from contracting that marriage."

"§ 1334. A marriage may be contested by the married partner who was induced into that marriage by wilful deception on such points as would, had he possessed a knowledge of the real state of things and a proper appreciation of the essence of marriage, have deterred him from contracting that marriage. If the deception has not been practised by the other married partner, the marriage is contestable only if that other married partner knew of the deception before the contraction of the marriage."

A drinker who is under tutelage on account of inebriety, may therefore contest his own marriage, if the latter was entered into without the consent of his guardian. The result of this contestation is the declaration of the nullity of the marriage.

There is no doubt that a man who has married an alcoholic woman, or a woman who has married an alcoholic man, without knowing him to be such, is equally entitled to contest the marriage according to § 1333. For alcoholism in its widest sense, even where it has not yet led to advanced physical and moral decay, is a personal quality in a married partner, the knowledge of which combined with a proper appreciation of the essence

of marriage would deter the other partner from contracting the marriage.—§ 1334 would be applicable, where the alcoholism no longer exists, that is where it is not a "personal quality," but where the fact of a former alcoholic disease has been wilfully concealed. For experience has shown the risk of relapse to be so great that a sensible person would thereby be deterred from marrying such a man or woman.

As a matter of fact such marriages are seldom contested, as in the first place the petition must be presented within 6 months, and secondly the drinkers are mostly men, and women do not easily have recourse to a proceeding which declares the married life that they have lived for some time, as null and void, and which stamps them, so to speak, to a certain extent as concubines.

An alcoholic marriage would be void from the very beginning, only if it were contracted during a permanent mental derangement which excludes the free exercise of the will-power, or during a condition of unconsciousness (unconscious intoxication) or temporary insanity.

Alcoholism does not constitute in Germany a direct ground for divorce. Besides California and Utah, this has recently been introduced into the law of England. Who gets senselessly drunk is subject to punishment; after the third offence he is placed upon the public drunkards' list, and his marriage may then be dissolved at once in favour of the other married partner.¹

¹Translator's note: The author has, perhaps, misunderstood the term "judicial separation" which may be granted to the wife or husband of a "black-listed." This is not, however, a dissolution of the marriage. The respective section of the Licensing "Act," 1902, says: "Where the husband of a married woman is a habitual drunkard as defined by section 3 of the Habitual Drunkards' 'Act,' 1879, the married woman shall be entitled to apply for an order under the Summary Jurisdiction (Married Women) 'Act,' 1895, and that 'Act' shall apply accordingly." This is how the Act of 1879 defines a habitual drunkard: "Habitual drunkard means a person who not being amenable to any jurisdiction in lunacy, is notwithstanding by reason of habitual intemperate drinking of intoxicating liquor at times dangerous to himself or herself or to others, or incapable of managing himself or herself and his or her affairs." The order referred to above, for which the wife of a habitual drunkard may apply, contains among several provisions dealing

According to German law, a married partner may sue for divorce if the other partner has by a serious violation of the duties created by the married state, or by dishonourable or immoral conduct occasioned such a shock to the conjugal relationship that it is unreasonable to expect that partner to continue the same. As a severe violation of the marital duties is regarded also gross cruelty. (*Bürg. Gesetzb.* § 1568.)

A married partner may further sue for divorce if the other partner has become insane, if the insanity has lasted at least 3 years during the married life and has reached such a degree that the mental companionship between the married partners has become extinct, and there is no prospect of this companionship being restored. (§ 1568.)

The connection between these grounds of divorce and alcoholism is of a various nature. First of all, actions committed under the influence of alcohol, represent to a large extent severe violations of the obligations springing from the married state. Special mention is made in the statute of the gross cruelty often experienced by drunkards' wives.

Further, the Reichsgericht recognises "inebriety" as immoral conduct by which the conjugal relationship may suffer severe perturbations. Inebriety is used here in its wider, not strictly medical meaning, and as synonymous with drunkenness. But *Endemann* points out quite correctly: that one who is already at the time when the petition is presented a real inebriate, may have brought about his present inebriety through a former guilty drunkenness, in other words through immoral conduct. Finally, chronic insanity may in a drinker be so severe, so persistent and take such a hopeless course that § 1568 may become applicable in addition.

If we wish to examine into the adequateness and suitability of these laws, we must in the first place have a clear conception

with the custody of the children, alimony, etc., a provision "that the applicant be no longer bound to cohabit with her husband, which provision while in force shall have the effect in all respects of a decree of judicial separation on the ground of cruelty." An interesting feature of the 1902 "Act" is that this right to apply for a summary judicial separation is also given to the husband of a wife who is a habitual drunkard.

of the general point of view to be adopted with reference to the dissolution of the marriages of alcoholics.

One definite section among medical men emphasises, above all, the welfare of the alcoholic patients. Their object is to look upon the drunkard already as a man who obeys an internal impulse, and to do all in their power that these unfortunates be not robbed of their last support, namely their married life. In the place of the dissolution of the marriage, there should be the cure of the drinker in some suitable institution.

Although such therapeutic endeavours must appeal to every medical man, it is our opinion that, even if applied at an early period, they are capable of rendering the dissolution of the marriage superfluous in a fractional number of the cases only. There are other interests as well to be considered in connection with the matter, besides those of the alcoholic himself: those of the wife, of the children, of the nation. Where these interests are likely to suffer injury through a continuation of the marriage, those of the alcoholic who is, as it is, a diseased and degenerated individual, must recede into the background. Genuine humanity cannot be practised without such apparent hardships.

Let us look now at the different forms of alcoholism as regards their effect upon marriage and the influence of treatment upon them. There are first the mentally degenerate, in whose case drink means a still deeper destruction of a morally joint-life inharmonious from the very start. Even if they stop drinking in consequence of treatment, they never become perfect human beings, and the danger of a relapse is particularly to be dreaded, or else, if they remain abstainers, they begin, from an inner desire for perversities of some kind, another folly instead. As married men, as fathers they only cause mischief. In contrast to them we see the army of uncouth individuals who drink, because it affords them pleasure, without feeling an internal impulse, without having a pathological inclination. These men we can probably compel to live without alcohol for a long time in an institution, but their character we cannot change, and when they come out they begin the old game again. A third class is formed by those who were formerly

in perfect health, but who have been crushed permanently by the overpowering influence of alcohol, individuals who when they are discharged from the sanatorium, are, indeed, cured of the drink-habit, but otherwise broken in body and spirit. Does institutional treatment render any of these people again fit for married life? True, some cases promise in this respect as well, a better success, but this success is never certain. The number of those who relapse is great, and before treatment at an institution can be commenced again, the wives are once more ill-treated, the families again brought to destitution, and fresh children are brought into the world endowed with a sad blood-inheritance.

Let those who desire to do their best for the poor alcoholics, do so, by all means, but they must adopt other measures, not the continuation of marriages which have lost every internal *raison d'être*.

It is not the fear that too many alcoholic marriages might be dissolved in virtue of the present law, which gives cause for criticism, but rather the difficulty to make this law practically sufficient.

The object of the law is obviously to permit the dissolution of marriages in which the married partners have become, morally and mentally, deeply estranged from one another, and particularly in which one of the partners severely imperils the most important interests of the other. In the case of alcoholics, this object is attained when by their moral guilt things have gone thus far.—This is clearly seen by the expressions borrowed from the vocabulary of morality, such as "violation of duties," "dishonourable," "immoral." The object is further attained if there exists an especially far-reaching and long-lasting decay of the psychical life.

But then there are also cases—and they really are not so very rare—where none of these conditions apply and where the moral union is, nevertheless, totally destroyed. This happens—as we have already indicated—where the people have become alcoholics or inebriates without committing in their opinion any excesses, without even at first creating the impression that they ever get drunk, where they have acquired the habit instinctively

and unknown to them, only because they drank no less than is customary among the circles they belong to. This happens further in the case of periodical drinkers who, without having been previously subject to attacks of drunkenness, develop occasionally but not permanently a state of inebriety in consequence of an insurmountable inner craving.

In these two cases not even the paragraph relating to insanity can as a rule be made use of. Because the periodical drinker is not permanently insane, and the other alcoholic psychical derangements have that in common that their incurability can be assumed only very exceptionally. They generally disappear to a considerable extent through complete abstention from alcohol even if signs of imbecility have already shown themselves.

No doubt, these persons are not morally guilty, but divorce is not a punishment, and to the wife who has to endure the consequences of this unguilty alcoholism, it makes very little difference whether her married happiness has been destroyed through or without the fault of her husband. As matters stand at the present day, many such innocent drinkers suffer a far greater injustice not only by being divorced, but also by being wrongly regarded as immoral and wicked creatures.

It is, therefore, desirable that a general law should be introduced, somewhat on the following terms: "A married partner may sue for divorce if by the drunkenness or inebriety of the other partner, such a severe perturbation has been caused in the conjugal relationship that such married partner cannot reasonably be expected to continue the same."

2. *Morphinism.*

General remarks.—In discussing chronic alcoholic intoxication we had to be careful in avoiding the mixing-up of this term with that of inebriety, as otherwise wrong conclusions would have been inevitable. In regard to chronic morphine intoxication, or *morphinism*, we can afford to be less strict, for it acquires an importance in civil life only when it has led to a craving for morphia. For morphia is not an article of consump-

tion in general use which is at the disposal of everybody under the mask of harmlessness or even pressed upon one by popular custom, but a substance known generally as a poison or as a medicine which must be taken with great caution. The person stricken with severe disease to whom large doses of this drug are constantly being administered is, perhaps not very rarely, in the scientific sense a morphinist, but the intoxication has no influence whatever upon his entire mode of life, and it would therefore be, as regards morphia, sheer pedantry if we were to distinguish between morphinism and morphinomania.

A morphinist in the sense of the following observations, is therefore a person who has, through the use of morphia, reached a condition in which under ordinary circumstances he is unable to resist the desire of having further quantities of the substance introduced into his organism. Such a person is in a state of compulsion which, looked at medically, is a mental derangement.

The immediate consequence of the administration of morphia is a pleasurable sensation. Physical pain or other symptoms of irritation (coughing, vomiting, strangury) disappear, and sleep which was through these causes impossible, makes its appearance. Physical discomfort is also removed; the person unaccustomed to the poison, experiences an agreeable relaxation, a beneficial feeling, as if all earthly troubles had vanished, as if nothing else were left to do but just to live on in sweet contentment. Those who are already a little hardened against the drug look upon it rather as a stimulant; it no longer acts so powerfully in paralysing the psychical functions, but now removes only the inhibitions; one becomes under its influence fresher, more lively, more fit for work. But, of course, the intoxication is in every case succeeded by the reaction, by a most disagreeable sense of fatigue, a physical and mental discomfort which arouses only more imperatively the desire for further doses of the poison. And the longer the use of morphia is continued, the larger become the doses by which it is possible to obtain the desired result, the shorter the duration of the effect. In the severest cases the unhappy sufferers make themselves as many as 30 to 40 injections daily—this being the principal

form in which morphinists satisfy their craving—and thus they introduce into their bodies as much as 30 to 40 grains or more of the poison during the 24 hours.

Influence of marriage on the commencement of morphinism.—Among the various causes of morphinism marriage plays only a comparatively modest part. There is little in married life which is capable of giving rise to a craving for this narcotic.

Who are the people that inject into themselves morphia? They are individuals who have originally suffered from some physical complaint and wanted to kill the pain arising from it, or persons who have by some accident got hold of the poison of which they wished at first to make use only for the purpose of overcoming easily occasional attacks of ill-humour or other inner inhibitions. Sometimes even it is mere curiosity to try the mysterious power of the magic substance which results in the habit becoming established and in the inability to get rid of it. A special rôle is played among all these groups by the degenerates, by those who are, to start with, disharmonious in their feelings and their ambitions.

The principal contingent is supplied by doctors and chemists, because to them the poison is easily accessible, by officers because they are particularly often confronted by the necessity to suddenly bring into full action their entire mental equipment—this frequently happens to medical men too!—and by ladies of the better classes who often persuade their doctors to have recourse to the morphia syringe for the purpose of relieving them of the more or less severe headaches to which their sex is subject, a proceeding followed by the direst results.

There is nothing in all this which bears on the married state. At the utmost we might, perhaps, include among the occasions which are responsible for the first application of the syringe in women, the troubles of pregnancy, those of the confinement and those of a, perhaps not normal, lying-in period. But it is not generally the custom to treat the first-mentioned disorders and pains by the administration of morphia, nor is the remedy often applied in the diseases connected with the puerperium.

There is, however, one case where marriage is the real cause of morphinism, and it is just this case which is of the greatest importance: the morphinist is namely by far more inclined to transmit his habit to those around him than is the alcoholic, and the number of cases in which this is successfully done is decidedly greater in proportion than in drinkers. Women especially are easily induced to give way to morphinism. The explanation of this psychological puzzle lies, perhaps, in the curiosity of woman which is excited by the peculiar and mystical qualities of morphia-intoxication, quite differently than by the well-known action of alcoholic liquor. Then the fact that morphinism is regarded by third parties as something æsthetically not so repulsive as drunkenness, may, perhaps, also account for the ease with which women succumb to its allurements.

This, at any rate, is certain—that morphinism "*en deux*" is very much prevalent, and not infrequently other members of the household, servants and children, are also drawn into it.

Influence of marriage on existing morphinism.—On the other hand marriage is rarely capable of bringing about an improvement of the condition, where morphinism does exist. The strongest wish to give up the pernicious habit for the sake of those one loves best, the most serious reproaches and most earnest entreaties of the other married partner are powerless against the inner compulsion. On the contrary, every little domestic trouble, every bit of discomfort associated with maternity in the wife, every cumulation of duties and cares occasioned by the married state, offers an opportunity to aggravate an existing morphine-habit or to relapse into one which has been overcome. *Levinstein* gives in this respect a very instructive example: A young lady received on account of renal colic, injections of morphia which were discontinued upon the disappearance of the illness. Years passed, and the war of 1870 called some of her nearest relatives to the field of battle, when, to deaden her fears and anxieties, she resumed the injections. She was never cured. Such experiences are, however, counteracted by the fact that the influence of husband or wife and the responsibilities involved in marriage are more likely to induce a married person to subject himself or herself to the

proper institutional treatment than is the case with those unmarried. In some of the milder cases a cure can even be achieved at home by the constant control of the other married partner.

Influence of morphinism on married life.—

The influence which morphinism exercises on married life is even more disastrous than that of alcoholism, seeing that the effect is produced by a particularly potent poison which has to be taken in doses that are, as a rule, increased much more rapidly.

Sexual connection.—The sexual connection ceases as a rule, if not soon, at all events after some time, although there are not exceptions wanting. This phenomenon is not due entirely to psychical reasons only. It is true that along with the total mental activity the sexual desire also becomes blunted, but several physical factors contribute their share: the *nervei erigentes* in man become paralysed, and the seminal secretion as well as the activity of the prostate are arrested. There is consequently an impotence in the fullest sense of the word which lasts, however, as a rule only so long as the morphinism itself endures. It is not incurable.

According to *Erlenmeyer* impotence begins only after large doses (about 1 gramme of morphia daily), and if the habit has been long established, after somewhat smaller ones. Not unimportant to this aspect of married life, is the fact that smaller quantities of morphia have on the other hand often the effect to stimulate the sexual irritability and that the withdrawal of the morphia may be succeeded by a regular "erotomania," a morbidly increased sexual desire.

Moral intercourse.—The moral alienation between the married partners takes place like in alcoholism, but with remarkable differences. The single intoxication-stages assume a less disagreeable form: there is not about the morphia-intoxication, as we have already said, that repulsive element which characterises the drunken bout. The latter makes coarse, quarrelsome, indiscriminating, excited—the former lulls its victim into fantastic dreams or rouses him mentally to genuine lofty accomplishments, but it leaves him at all events in physical rest and psychical peace. All those painful and wild scenes which

are so common in alcoholic marriages are in morphinistic marriages as a rule absent, at least at the beginning. But though this sort of married life is not a visible source of outward trouble, it lacks its object, and the close observer can see the deep lacerations under the smooth surface.

Soon the morphinist is capable of doing mental work only so long as he is under the influence of the poison, afterwards not even then. His memory fails him more and more. If for no other reason, the sphere of his interests is constantly growing narrower, and in the course of time it becomes so limited that all his attention and thoughts are concentrated round one single object, namely morphine. Married partner and children become a matter of complete indifference. The disposition fluctuates between reckless optimism and painful unrest; fatigue and indolence to such a degree that the patient falls asleep in the middle of the day, occur now and then. The morphinist becomes unbearably capricious, the toy of every instinct. Adultery happens, especially during the stage in which the sexual irritability is increased, exactly like in alcoholism.

No means are bad enough if the hypodermic can thereby be obtained. He becomes a cheat, a thief and a burglar. He is the most consummate liar that has ever been seen.

The morphinist but rarely becomes insane in the narrower sense of the word, at least not unless his craving arises on the basis of an already previously existing deterioration of his psychical life. For this we must point out once more that a large number among the morphinists are degenerates, individuals who have always lacked the internal sense of proportion, and who have for this very reason easily fallen a prey to the morphia habit, or people who were already psychically debilitated through other causes, such as acquired neurasthenia and especially alcoholism. That such persons may eventually be attacked by insanity or imbecility, if a fresh injury affects their mental health, goes without saying. *Erlenmeyer* emphasises as characteristic of the mental disorder of morphinomaniacs the peculiar mistrust which may grow so as to become a regular hallucination, and the termination is incurable idiocy.

There are also psychical derangements to be taken into con-

sideration which appear in consequence of the withdrawal of the drug, but which take as a rule a favourable course.

Cocaine-insanity.—Most dreadful is, however, the calamity which befalls in a psychical sense the unfortunate individual who has by some mischance or other, laid his hand upon cocaine as a substitute for morphia. This drug acts upon the psychical condition almost like a destructive explosive. The intoxication from cocaine resembles that caused by alcohol: the individual in question becomes talkative, boisterous and jolly. As soon as the intoxication has gone, there appears an anxious unrestfulness which impels one to repeat the injection. The continual increase in the single dose, if the subjective beneficial effect is to be obtained, becomes necessary much sooner than with morphia, and proportionately more rapid is also the decay of the psychical personality. Cocaine-insanity breaks out uncommonly often, sometimes after a few weeks from the establishment of the habit, and it is characterised by vivid illusions mostly of a distressful nature and by a fanciful interpretation of unpleasant personal sensations. The cocainist runs about with the revolver in his pocket, and not infrequently he makes real use of it to protect himself against imaginary foes.

What makes the cocaine-psychoses especially important from our point of view, is the close connection between the hallucinations and married life. These illusions are often of a sexually irritative kind and they may lead to perfectly senseless jealousy. Frequently the cocainist does not, like the alcoholic, accuse his wife of one illicit relationship or of occasional conjugal indiscretions only, but of numerous ones. He broods over the whole of her past life and acquires not a suspicion but the certainty that she has from her early youth given herself up to every one that came in her way, be his station in life ever so lowly, that, as *Kraepelin* quotes, she almost came into the world unchaste. It is clear that under such circumstances even the most formal married partnership must come to an end.

Though this cocaine-insanity is easily curable, as the withdrawal of the drug is usually not difficult to accomplish, and the hallucinations disappear after that as a rule, the character of

the person who has gone that far is in most cases so irredeemably shattered that a relapse is unavoidable.

Material considerations.—The mental collapse is generally accompanied by a severe decline in the worldly affairs of the married morphinist. It is in those vocations especially from which the number of morphinists is chiefly recruited, that people cannot be employed whose principal characteristic is their unreliability. The doctor, the chemist, the officer, the merchant, they are all so situated that their existence depends upon their clear-headedness and their readiness to deal with the problems of the moment. Of all the stages of the morphine-intoxication only one thing is of use to them, namely the stimulating effect of it, but not the weary brooding, or the condition of disquiet and mental restraint. It is, indeed, remarkable how many notorious morphinists among medical men manage to retain for years the eminent position which they acquired before they were seized by the terrible affliction; but in time more and more of the glittering surface is bound to crumble away, and nothing is left but utter ruin and misery.

Just as the morphinism of the husband causes a gradual diminution in the material welfare of the family so that of the wife brings disorder and chaos to the household. The morphinistic married woman neglects her duties and obligations, she loses her control and authority over those under her.

The body of the morphinist suffers along with the mental activity, so that he frequently lacks also the necessary physical fitness to look after his family. He becomes pale and thin, the tissues lose their elasticity, the digestion is impaired, the hair turns grey, in brief, he is in every respect an old man before his time. The carelessness with which he introduces dirty needles into his skin, without cleaning the latter first, constantly creates abscesses and cellular inflammations which render him totally unfit for work. Every accidental illness, especially if it is accompanied by fever, endangers the morphinist's life far more than that of individuals who are not under the influence of the poison.

A large number of morphinists put an end to their own existence. This is brought about by the discomfort of the reac-

tion coupled with the true regrets over a wasted life and the hopelessness that stares one in the face after repeated vain attempts to throw off the unhappy craving. Regard for wife and children is no longer a deterring factor, either because the sufferer is not susceptible to any altruistic feelings or because he thinks himself a burden to others whom, but for his terrible affliction, it would be his duty to support and care for.

Thus it happens that in morphinistic marriages it is either the bread-winner or the guiding housewife who soon disappears from the scene—leaving behind him or behind her a sad picture of misery or of disorder and cheerlessness. If things do not go quite so far, morphinism is, at all events, more likely than alcoholism to bring about a severe deterioration of the material welfare.

Morphia is in itself more expensive than alcohol, even if it is procured in the proper way by means of doctors' prescriptions. But advanced morphinists obtain it largely from unscrupulous dealers (*Erlenmeyer* numbers among his patients 90-95% who obtained the poison in this way) who take a shameful advantage of their customers' thralldom, charging them double and even more, than the price allowed by the law.¹

In addition to this, almost every morphinist tries institutional treatment again and again, either because he believes he can be cured, or for the purpose of coming back to a less advanced stage of the habit, if the daily doses have reached a dangerous extent. The person who, as it has happened, is treated within 3 years in 16 different establishments, must be something like a *Cræsus* to be able to support a wife and family at the same time.

The offspring.—And now as regards the fourth factor, the offspring of morphinists. We have already seen that virility becomes extinct after large doses of morphia. Similarly menstruation often ceases in women, and the expulsion of ova from the ovaries becomes scanty or ceases altogether. Under such circumstances the marriage is naturally sterile. We cannot, of

¹Translator's note: The prices which chemists are allowed to charge for drugs, etc., are in Germany fixed by the authorities.

course, from the absence of menstruation jump to the conclusion that ovulation is also absent, for pregnancy has in such cases been occasionally observed. These pregnancies may take a premature end, but they need not necessarily do so. Although it is well-known that morphinism is in close relationship to the frequency of miscarriages, there are, nevertheless, many cases where female morphinists are confined at the proper time; several times mature and well-developed children have been born, although the mothers were in the habit of injecting 15 to 20 grains, or more, of morphia daily. The peculiar phenomenon is here noticed that the morphia-habit of the mothers is of advantage to the fœtus; they can stand such quantities of the poison as are sufficient to kill outright the fœtuses of mothers not chronically given to morphia. The probable explanation is, in view of the more recent investigations on the blood, that antibodies which have formed in the maternal organism, are passed on to the blood of the child.

But against that, the children when they are born, are not infrequently endowed with pronounced signs of chronic morphinism. They show a well-marked appetite for morphia. There is an active muscular agitation, they go for days without sleep, they cry constantly, convulsive conditions appear now and then, and a most dangerous cardiac weakness may develop. Then one thing brings relief—and this is the crucial experiment—namely a hypodermic injection of morphia or a dose of laudanum, both remedies the extraordinary toxicity of which as regards other children, is very well known. It is, by the way, very easy as a rule to break children of the morphia habit.

If the morphinistic mother suckles her infant, the symptoms of abstinence are absent until the child is weaned. For morphia passes into the milk in sufficient quantities to make the baby morphinistic or to maintain it in that condition.

But, of course, it does not happen very often that morphinistic mothers suckle their infants, if only for psychical reasons. They have not the inner restfulness, the self-control which a suckling mother wants. Besides, it happens sometimes that the function of the breasts like that of other glands is paralyzed by the morphia-poison, and that even the glandular structure itself

becomes atrophied. As to what becomes afterwards of the children of morphinistic fathers and mothers, on this point the statements of the various observers are not at all uniform. Some (*Happel*) say: "Most of them die during the first week after their birth, and those who survive, remain delicate and nervous and often become morphinists or drinkers." Others, on the other hand, maintain that if the children have withstood well the first days of their lives, they thrive afterwards very satisfactorily. *Erlenmeyer*, certainly one of those who know most about this subject, is, however, on the side of the pessimistic judges.

It remains, at any rate, a debatable point whether, if such a degeneration of the offspring does occur, morphia represents the principal or an intermediate cause. No doubt the original constitutional anomaly of hysterical persons, neurasthenics, psychopathic degenerates with psychical discomfort, tabetics, people with severe neuralgias, and above all alcoholics, is an important co-operating factor. Even where one has recourse to the morphia-syringe out of mere curiosity, and cannot afterwards do without it, there is an absence of character which borders close on the pathological. Without morphia, either, one can hardly expect a particularly healthy progeny from people of this sort. Whether the poison acts more indirectly by shattering the whole organism, or directly upon the germ-cells, it is up to the present impossible to say. As in the case of alcohol, there is an absence of the possibility of sufficiently wide and careful observations.

From a practical standpoint as regards the question of children, that morphinism which arises on a prepared basis, is of the highest importance.

Prevention of the marriage of morphinists.—

That much is certain, that neither a male nor a female morphinist is under any circumstances fit for matrimony. Hardly anyone will contradict this, and even to a less extent than as regards alcohol. The layman, too, will understand this much more readily, seeing that morphinism presents rather unusual features as compared with alcoholism which is on account of its common occurrence, looked upon as something more harmless.

It is in many cases possible to prevent the marriage of such

patients by a previous medical examination, for instance, by making life-insurance a preliminary condition of marriage. The flat oval scars and the hard infiltrated nodules which are seen on the body, especially on the arms of the person examined, as a result of injections, will arouse suspicion, and the contracted pupils, the dry or excessively perspiring skin, the general premature aged appearance will help to confirm it. But still, in the milder cases which are met with among candidates for marriage particularly—the advanced morphinist does not as a rule think of marriage—all these signs may be absent, and then there is nothing to call attention to a disease which the sufferer himself is hardly likely to mention.

That which may, in the case of alcohol, replace the absence of these diagnostic signs, namely a more exact knowledge of the candidate's mode of life, is in morphinism as a rule equally unavailable. It must be an extraordinary accident, indeed, if the friends of the morphinist have noticed as much as a certain alteration in his character, an occasional dissoluteness, an absence of the moral equilibrium.

As regards female candidates for marriage, it is only in an insignificant number of cases that a medical examination takes place previous to the event.

The harm which arises from morphinistic marriages is so enormous that the question is well justified: "Has not a doctor, when he learns that a person whom he knows to be a morphinist, is about to marry, the right and is it not his duty to impart this knowledge to the other party involved?" A moral duty most undoubtedly it is, in our opinion, since to allow a morphinist to marry, is in reality not much different than to acquiesce in the marriage of a lunatic. It is, however, very questionable whether the law would take the same view. The person who tells his or her doctor, or who enables him by some means or other to know, that he or she is in the habit of injecting morphia, confides to him under any circumstances a secret to the further revelation of which he or she would never consent, and as to whether the revelation of this secret can take place without committing a breach of § 300 of the German Criminal Code,¹ that is a point

¹Translator's note: See the article by Dr. Placsek for details on this point.

upon which commentators of the law and judges are not agreed. Those who think with *Gross* that the decision is best left in each case to the conscience of the doctor concerned, will at any rate feel justified in their own eyes if by considering themselves at liberty to make known a secret which has been entrusted to them, they are enabled to avert untold misery and misfortune.

Whether former morphinists who have undergone a successful cure of the morphia habit should be medically permitted to marry, depends in the first place upon the length of time which has passed since the cure, and also upon the general health of the person in question. The danger of a relapse is very great, and a probation of several years must therefore be insisted upon as a preliminary condition. The case communicated by *Erlenmeyer* in which the patient who had been a morphinist for 6 years, went through a two months' cure and married a month later, presents serious objections. It is true that the individual concerned did not have a relapse for two years, but he suffered in the first few months from severe gastric catarrhs, and it was probably the fact that he had married his nurse, which accounted for the absence of a relapse (thus far!). Where morphinism has arisen on a morbid psychical basis, the best advice, even after a "cure," is to leave marriage alone. In women especially, the danger that pregnancies and confinements may re-awaken the dormant craving for the drug, is very great. On the other hand it cannot be denied that the ungratified lonesome mode of life of unmarried people also constitutes a strong temptation to fall back upon morphia, and that many a morphinist might possibly be saved permanently by the beneficial influences of married life. But here, too, we take up the standpoint that it is not right to jeopardize the health and happiness of several people and especially those of a future generation, for the sake of an imperilled single individual.

Placing under tutelage on account of morphinism.—A defect in the German law is the impossibility to prevent morphinists from marrying, by placing them under tutelage. And yet the danger of morphinism is not one so much smaller than that of alcoholism. The morphinist whose scheming and thinking is directed towards one goal and

namely how to gratify his craving for the poison, neglects everything else; he is "incapable of managing his affairs" without being necessarily regarded in the sense of the law as insane or feeble-minded. He exposes, as we have seen, himself or his family to the risk of privation and poverty in a marked manner; he endangers, if he occupies a responsible position, the safety of others; morphinistic doctors and chemists are apt to mistake one drug for another, the former often prescribe to their patients morphia in such a senseless way that they almost create regular "morphinistic communities." They are therefore an undoubted source of peril to their fellow-men. Nevertheless, they cannot be placed under guardianship. An addition to § 6, section 3, of the Civil Code is consequently an urgent desideratum, viz. in the following form: "Whoever is incapable of managing his affairs in consequence of inebriety or through a craving for morphia or similar drugs which tend to destroy the moral and physical health——etc."

One of us (Medizinalrat Dr. *Leppmann*), in spite of a large practice as expert in civil law proceedings, has only once succeeded in having a female morphinist placed under tutelage, and this case particularly shows how difficult it was to achieve this result, although the patient in question was already insane in the narrowest sense of the word and had already caused a great deal of mischief.

The case was that of a person, hereditarily tainted, who had from her childhood been very excitable and obstinate and who had, already as a girl, used injections of morphia. She married when 18 years of age, without being pressed into it, a man much older than herself, but began soon after the marriage to drink and to deceive her husband. About the same time, though it could not be ascertained exactly when, she commenced to inject large quantities of morphine. Her husband divorced her and she married a young man with whom she had previously had intimate relations. Shortly after this second marriage she began to have hallucinations, she became furiously excited and admitted at the establishment to which she was sent, that she had been for years addicted to morphia and cocaine. Two years followed during which vain attempts at a cure alternated with

a most miserable domestic life. The patient gave birth to a child which survived. A short time after that, her second husband also divorced her, after she had succeeded in making of him a morphinist, too. The child had to be taken away from her, as she used to put narcotics into its milk. After that she cohabited for a time with her divorced second husband.

For a number of years she had lived in an utterly neglected condition, until she was placed under guardianship. Physically she seemed to be in a fairly good state, but psychically she was somewhat frightened and hasty, though in perfect command of her tongue. She knew how to represent everything so skilfully, as though her illness was by no means so serious and as though she had been ill-treated by others. Months passed until it was possible to prove by repeated examinations of the patient and by the testimony of a large number of witnesses that Mrs. X. was suffering not only from occasional illusions and hallucinations, but also permanently from a morbid weakness of the will-power with impulsive variations from depressions, total bluntness of the moral emotions and a pathological indifference towards the outer world and her own person, in other words that she was insane within the meaning of the law.

To think that it could be so difficult to obtain legal control over a person whose biography sounds like a fictitious case describing the misery which morphinism may give rise to!

Separation of spouses in morphinism.—In order to cure morphinism, a temporary separation of the married partners is even more imperative than in alcoholism. The placing of the patient in a sanatorium is absolutely necessary, especially as the difficulties which exist in the case of alcoholism with regard to the maintenance of the family are not very pronounced, as a rule, among the classes to which most morphinists belong.

If a cure cannot be accomplished, a permanent dissolution of the marriage must be thought of. One might, perhaps, object that there is no need here to take into consideration a possible procreation of delicate and degenerate children, as morphinism renders its victims sterile. But a rule which is often broken by exceptions, as this one is, cannot constitute the guiding element

of our medical action. At the most, we might remember the point in the case of definite individuals in whom the male or female sexual activity has long since ceased.

As regards contesting the validity of a marriage on the ground of morphinism existing previous to the contraction of the marriage, the law offers sufficient possibilities.¹ On the other hand the dissolution of the marriage with a morphinist is rather more difficult. It is almost desirable from the point of view of the married partner who wishes for the dissolution that no medical man should be called as a witness. Then it might, perhaps, happen that the dull and indifferent attitude of the morphinist which offends against honour and established custom, would be regarded as a severe violation of the duties created by the married state, or as "dishonourable or immoral conduct" within the meaning of § 1568 of the *German Civil Code*. (See p. 1113.) But the medical expert would as a rule be bound to object that these defects of character are due to the action of the poison, and that the patient has succumbed to them against his own will entirely, in consequence of a morbid impulse. Even the plea, not infrequently employed against the alcoholic, that the habituation to the poison is in itself "immoral conduct" and a dereliction of duty in the sense of the law, cannot as a rule be admitted against the morphinist. For very often the beginning of the mania lies in a medically prescribed prolonged administration of morphia, and who dares to draw the line when the continuation of the use of the drug is a guilty indulgence in prohibited pleasures, and when it is, on the other hand, a morbid yielding to an inner compulsion?

That the mental alteration in consequence of the abuse of morphia assumes the character of a permanent disease in the

¹Translator's note: This applies, of course, to the German law, but I am inclined to think that the English Divorce Court would grant a decree of nullity under such circumstances, on the ground that there was physical incapacity for sexual intercourse at the time the marriage was contracted. The question is, however, whether sufficient evidence could be brought forward that the incapacity in question is of a permanent nature, as this constitutes one of the conditions demanded by the Divorce Laws. At all events there is no hard and fast rule in England such as there is in Germany, and each case would be dealt with on its merits.

meaning of the law, happens occasionally, as we have seen. In such cases the mental companionship is destroyed. If several attempts at cure no longer remove the mental defect, every hope that that mental companionship will ever be restored must be abandoned, and if the habit has lasted at least three years since the marriage was entered into, the conditions of § 1563 of the Civil Code are fulfilled in their entirety. But there must be a transition from the mere morphinistic neglect to permanent and severe disease. The dulness and disinclination, the indifference and bluntness of the ordinary morphinist which it is possible to cure by suitable treatment, are not sufficient to bring about a divorce. It is very rarely that he reaches a stage of uncomparable weakness of judgment and permanent hallucinations, or that a stay in an institution and abstinence from morphia for several months can no longer restore the mental companionship. At the most this may be the case in morphine-cocaineism.

At all events the dangers of morphinism even if it does not reach such a high degree of destruction, are so enormous to the married state, and the possibility of a dissolution of such marriages from other legal causes is, as we have seen, so limited that morphinism, like alcoholism, ought with certain reservations to be included among the legal grounds for divorce.¹

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¹Translator's note: The reader must remember that the divorce laws of Germany are far more elastic than those in force in this or any other English-speaking country—with the exception of some of the Western States of North America—and that the contributors to this work have in the first instance when writing on the subject of divorce thought of their own country. Their arguments will, however, apply anywhere and everywhere, and the time may not be very distant when the question of altering the divorce-laws of England, or at least making them more in line with the medical point of view, will become an actual and burning one.

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XXV

**Occupational Injuries in Relation to Mar-
riage**



OCCUPATIONAL INJURIES IN RELATION
TO MARRIAGE

By A. and F. Leppmann (Berlin)

General remarks.—Necessary though it is to follow some occupation in order that we may remain healthy and able-bodied, it is, nevertheless, a fact that every employment carries with it a certain amount of danger to health. The manual labourer is obliged to assume positions or to carry burdens which in time become more or less unendurable. He must do his work sometimes out in the cold, at others when it is very hot, now in an excessively dry atmosphere and then in one which is full of humidity, or be, perhaps, exposed to all sorts of weather. From the raw material which he manufactures into various articles he receives injuries of all kinds, either because he falls a victim to the brute force of explosions or other similar accidents or because he is liable to be attacked insidiously by poisonous substances or by contaminations of the air in the form of dust. In addition, the work is often enough excessive either in its quality or in its prolonged extent of time.

Nor is the mental worker, on an average, less in peril. In his case, too, an excessive amount of exertion has frequently enough calamitous results, especially as it is much more difficult for him to define the exact limits of his work. Duties which cannot be subdivided into fixed instalments engage the attention during the so-called leisure hours as well, often the night-time is also encroached upon, or the prolonged mental work renders sleep difficult and steals the hours of rest. Some occupations, as for instance that of the doctor, chemist, nurse, in which physical work combines with mental activity, are from their very nature so constituted that they never permit with any certainty

the amount of rest which the organism requires. Often mental labour involves a continued confinement in close, hygienically perhaps unsuitable, rooms, an absence of exercise and of inurement, an unhealthy pondering over books and folios. Above all, it is as a rule accompanied by more serious psychical perturbations than physical labour.

Prevention of occupational injuries by marriage. — If all these dangers do not in every case cause disease, and if occupational diseases are not always succeeded by infirmity, we are indebted for this not only to the resistiveness of our organisms but also to our conditions of life, and it is here where marriage can doubtlessly exercise an extraordinarily beneficial effect.

In the first place a large number of women from among those who follow an employment, withdraw by marriage from it altogether in order to devote themselves to a vocation which is at all events considerably healthier than the majority of all the other female occupations. Girls whom we see as shop-assistants, embroiderers, seamstresses, ironers, mill-hands and in other kinds of situations, anæmic-looking and delicate and suffering from all sorts of nervous complaints, often become, by marrying, strong and healthy women. This is not due only to the circumstance that married life affords physically and mentally a more satisfactory existence than does spinsterhood, but also to the fact that a large number of the immediate injuries which we indicated briefly above, no longer come into action.

The man, it is true, continues even when married to be subject to the injurious influences of his occupation. But a happy married life and a well-regulated domestic routine enable him to protect himself to a much greater extent against those injurious influences. To most men marriage means an improved mode of life such as is urgently wanted in the struggle against occupational dangers.

The unmarried working-man finds as a rule when he comes home tired after his day's work, no attendance, no comfortable room, no properly prepared food, and sometimes not even a bed upon which he can stretch his weary limbs. Instead of counteracting by the beneficent influence of rest, good nutrition and—

last but not least—moral comfort, the preceding exertion, he is, on the contrary, obliged to add to the one damaging element another in the shape of the evils of the lodging-house and public-house life. Under such circumstances marriage is capable of acting as the best preventive against disease, and if disease happens to break out nevertheless, it offers the nursing which is most suitable in occupational diseases most of which take quite a chronic course.

The observation is also frequently made that a married working-man is more careful of his health than the unmarried one. He understands that every illness which would befall him might have for himself and his family consequences of a most serious nature, and he lives therefore more hygienically. He is more precautions at his work so as to escape avoidable injuries. He utilises more his time of rest, and in a more sensible fashion. A most instructive example of the way in which married working-men are almost instinctively bent upon spending their leisure hours under healthy conditions, so as to counterbalance the injurious effect of their occupations, can be seen in Berlin, in the so-called "summer-house colonies." Wherever there is yet a large plot of land unoccupied by houses in the vicinity of the capital, it is sub-let in small plots which are turned into gardens with little wooden summer-houses, the tenants being mostly married working-men. During the summer the families stay there the whole day and the bread-winner himself spends his evenings and Sundays in clearing his lungs of the smoke and dust inhaled at the work-shop, while he has at the same time an opportunity in the cultivation of his little garden or in doing a little joinery at his fence or summer-house, of performing some work on his own account which gives him a chance of exercising his brain and of consulting his own tastes after having been at the mill nothing but a human machine engaged upon some monotonous and uninteresting task.¹

¹Translator's note: Would that someone could teach our factory operatives, and others like them, to spend their holidays in this sensible way instead of going in crowds to some seaside place from where they, as often as not, return more exhausted than when they left their homes.

Of course, there is no reason why an unmarried man should not go and do likewise, but it is only marriage which brings as a rule along with it a sense of steadiness, and pleasure at the thought of a quiet and regular life which is the preliminary condition of every hygienic self-help.

The mental worker, too, finds in marriage an aid against the injuries of his occupation. He throws off the senseless habit of "working away," he recognises the necessity of giving some of his time and thoughts to other things besides his profession and his duties. And while he feels compelled to give himself a change and to devote a few hours to the wife and children, he observes that he feels more fit and fresh than when giving his thoughts no rest. Where marriage really fulfils its ideal object as a spiritual fellowship, the mental worker is sure to find in his wife at the same time a true comrade who will help him to bear the moral perturbations of his vocation and who can do a great deal towards the solution of the inner conflicts which so easily exhaust toilers of this kind.

The aggravation of occupational injuries through marriage.—Unfortunately this ideal picture of marriage as a help against occupational injuries is by no means always applicable. Quite apart from the accidental conflicts of married life which make a beneficial influence of the latter impossible, there is one circumstance which occurs only too often and which tends to aggravate all occupational injuries instead of acting against them, and that is if the income of the husband is insufficient to support the family as long as his activity is commensurate with the dictates of hygiene.

In such a case the man must either endeavour to obtain more profitable work which does not suit his ability, or else the family is not in a position to spend sufficient sums for nourishment, clothes, housing accommodation, fuel, etc., or the wife must go out to work and earn money. In each one of these alternatives the effect of the occupational injuries is bound to be greater.

If a delicately-built man is forced by poverty to carry stones up a building, he is sure to break down in health after a time. If the stone-cutter has not any proper food he becomes tuberculous, and the inspector who cannot afford to buy warm clothes

is certain to fall a prey to some disease due to cold. But the remedy, namely that the wife should assist in earning a livelihood is bad enough. Her sphere of duties becomes thereby doubled, her strength gets exhausted and thus the occupational injuries gain the upper hand. Pregnancy and the period after the puerperium especially, create conditions, under which the organism of the woman most easily succumbs to the dangers which employment brings her. We shall have occasion to return to this subject more fully later on. Here it is sufficient to have pointed out that beneficially as marriage may act in the struggle against occupational injuries, there are cases where it may under certain circumstances have a totally contrary effect.

Reactionary effects of occupational injuries on married life.—If we consider now the relations between occupational injuries and marriage from the opposite point of view, what reactionary effect have the former on the latter?

It will be possible to dismiss in a few words large portions of the hygiene of occupations as their relations to the married state manifest themselves only in the form of diseases which are dealt with in the several parts of this work.

This applies in the first instance to the entire group of injuries caused by the mechanical action of dust in industrial occupations. We may mention as their most important consequences, the diseases of the respiratory organs which arise in grinders, millers, bakers, etc., in the form of inflammations of the lungs—here there is also a certain amount of caustic action,—in coal-miners, grinders, stone-masons, millers, bakers, ultramarine-workers, spinners, and weavers in the form of chronic pneumonias of a particularly severe kind (anthracosis, siderosis, chalicosis, pneumonie cotonneuse.) These diseases, again, are intimately connected with the origin of pulmonary tuberculosis. Of less importance are digestive disturbances in workers with dust which arise especially through definite chemical properties of the dust.

Among the infectious or parasitic diseases brought about by industrial occupations (anthrax in tanners, butchers, wool-workers, and rag-gatherers; actinomycosis in agricultural labourers and cattle-dealers; worm-disease in miners, brick-layers

and tunnel-workers) there is one which is of the greatest importance as regards married life, namely *syphilis*. It is by no means infrequently circulated, by the glass-blowers' pipe travelling from mouth to mouth, among whole groups of workmen working together. Among the communications published in the last few years there is a dissertation by *Eysel* (1896) who reports on 12 cases of such a syphilitic transmission. In the glass-works of Amelith a syphilitic blower infected 11 fellow-workmen; the primary lesion was in every case found in the region of the mouth. A similar epidemic arose in 1897 in the district Hildesheim-Lüneburg. The infection with tuberculosis also plays a great part among industrial labourers, considering how prevalent this disease of the masses is.

The group of injuries arising through the influence of the temperature, light and humidity, has little to do with marriage. It suffices to call attention to the premature infirmity caused by severe rheumatic affections in workmen who are liable to get wet and are subject to rapid changes of the temperature, and to mention the unfavourable effect of prolonged darkness (in miners) and great heat upon the state of the blood. The sexual over-irritability supposed to be present in bakers has been attributed, without justification probably, to the heat of the bakeries. It is more likely that the principal cause lies in other circumstances to be considered later on.

Pressure and friction against different parts of the body play from the standpoint of married life a more important part in industrial pursuits. Thus we come across the discharging cutaneous inflammations of the genital organs which are frequent in coal-miners and tar-workers but which arise also easily through a combination of dust, heat and active movement, and which are capable of disturbing materially the sexual relations between husband and wife. Their most dangerous manifestation occurs in the form of the scrotal cancer of chimney-sweepers and of workers in tar and paraffin, which necessitates occasionally a complete removal of the genitals.

In a definite group of female workers the employment produces a serious impairment of the sexual life; machinists are said to experience a sexual irritation through the constant friction of

the thighs against one another. This may go so far as to show itself to the experienced observer in a characteristic manner; the machine appears to go at an unusually quick rate, the machinist has a congested face and looks quite absent-minded, and then—after ejaculation has taken place from Bartholin's glands,—she stops as if exhausted and looks around her with some embarrassment. This seems to be therefore a regular masturbatory act, and the causation of such processes by the employment is consequently of the utmost importance to the sexual and married life of the woman. The question is only whether it is not in such cases perverse thoughts that lead to the abuse of the machine.

Closely connected with this are the injuries produced by definite positions, movements and attitudes necessitated by some employments. They gain an importance, as far as married life is concerned, through their influences on the bodily constitution of the women-workers.

The constant sitting position is, especially if combined with a bending forward (seamstresses, embroiderers, flower-makers, female clerks) inevitably succeeded by a crowded condition of the thoracic as well as abdominal organs. Thus there may arise on the one hand anæmia and tuberculosis, and on the other congestions in the genital organs. Catarrh of the uterus and disorders of the menstruation result in consequence.

Particular attention has been devoted to the state of health of machinists in whom the injurious attitude of the body is besides other harmful agencies (bad ventilation in the workshops, poor social conditions), associated also with the uniform movements of the legs. *P. Strassmann* found among 1500 patients of the Charité clinic for women, no less than 356 machinists of whom 136 worked more than 10 hours a day; 18.8% suffered from inflammatory affections of the uterine appendages, a circumstance which *Strassmann* is inclined to attribute in part to a furthering of the ascent of inflammatory processes from the uterus by the treadling movements of the machinist; 21% suffered from uterine complaints; 10.1% had pregnancy-troubles; 17% presented themselves on account of miscarriage; 37% stated that they had had miscarriages at some time or other. That means that there were 139 women,

who from their own statements had had 232 miscarriages and 26 premature labours!

It was at the time objected against this communication that the nature of the employment need not necessarily be made responsible for the frequency of the diseases. The unfavourable social conditions among which these working-women live contribute their share, and the rest is brought about by sexual infections and premeditated abortion. But that a quarter of the number of patients of a large hospital should consist of machinists cannot be merely an accident. *E. Falk* also has recently confirmed that miscarriages and diseases of women are promoted by machining.

Prolonged standing such as takes place in the case of ironers and also in weaving-mills, dye-works, spinning-factories and calico-printing-works, causes injury in two directions: in those whose growth is not yet complete the formation of the pelvis is unfavourably influenced, and it also favours the origin of gynæcological diseases. The straight muscles of the back and the thigh-muscles are constantly on the stretch and where the growth of the bones is not yet finished this increased tension causes a change in the shape of the pelvis. Thus the flattened pelvis is formed which becomes later in life when the woman is married, a source of serious trouble in confinement. *Könnitz* mentions distinctly that he has often seen these changes in women who had no rickets when they were children, but who began at the age of 14 years to work in weaving-mills. We may here at once call attention to the remarkable analogy that girls who are employed in mines develop besides spinal curvatures fully pronounced pelvic contractions as a result of the crouching position which is in this sort of work necessary. Of women's diseases there arise disturbances of the menstruation and chronic catarrhs of the uterus through the greatly impeded return of the venous blood from the lower half of the body in consequence of the prolonged erect position. If a gynæcological disease is already present it is considerably aggravated by long standing. (*E. Falk.*) The frequency of uterine flexions and malpositions is not explained by the standing as such, seeing that the body of the uterus is usually directed anteriorly and the

erect posture ought, if anything, to cause it to sink still more forward. *Agnes Bluhm* sees—whether correctly is still open to doubt—an intermediate cause in the prolonged fulness of the bladder (due very often to the regulations and arrangements in force at the respective works) by which the uterus is raised and pressed backwards. Perhaps, the women's diseases are to some extent produced also by shocks to the pelvis which affect the erect body from below. This is supposed to explain the remarkable prevalence of these diseases among weavers as compared to spinners (according to *Schuler* in the proportion of 48 to 27).

Occupational Intoxications.—Of more than ordinary importance are the relations between the occupational intoxications and married life. Here we must enter into closer details.

As regards the most important of all these intoxications, namely lead-poisoning or chronic plumbism or saturnism, we know that it occurs very often and in the most different industries. Workers in white lead, sugar-of-lead and accumulator factories, potteries, compositors and painters probably supply the principal contingent, but there are several more, in fact many more industries—according to a recent calculation one hundred and eleven—the workmen in which are subject to chronic lead-poisoning. We have only to recall in a few words how dangerous and even destructive plumbism is to the physical and moral companionship of married life and to the material circumstances associated with it. The influence of lead-poisoning on the offspring is, however, less generally known.

It must be regarded as proved that lead-poisoning of the father, and particularly of the mother, impairs severely the vitality of the progeny. The stronger influence of the maternal disease is easily explained by the passage of the poison through the placenta to the fetus, as has been experimentally demonstrated in guinea-pigs by *Porak* and *Balland*. The milk, too, occasions a further injury. In a case specially examined upon this point, 115 grammes of milk contained half a milligramme of lead. It was also possible in the child of a woman with lead-poisoning which died when 7½ months old, to ascertain a con-

nective-tissue degeneration in several organs and the presence of lead in the liver and in the kidneys. The extraordinary frequency of miscarriages in patients suffering from plumbism is in full agreement with this. It is surely no accident that *C. Paul* has seen out of 142 pregnancies of lead-poisoned women only 10 children born that survived their third year. Miscarriage occurred 82 times, premature labour 4 times, 5 times dead children were born, 20 children died in their first year, 8 in their second and 7 in their third. *Balland* has recently examined the question experimentally. Of 8 pregnant guinea-pigs poisoned with lead, 5 miscarried, and one died during the pregnancy. Two were delivered at the proper time, but the young were very small and delicate. Clinically the results were similar. Five lead-poisoned women gave birth out of 27 pregnancies to one living child only. Six women who before working with lead had given birth to 10 mature and living children obtained while they were thus employed only 8 living children by 43 pregnancies, 4 of whom died in their first year and only 2 survived their first years. Six women with lead-poisoning of a milder character brought into the world by 29 pregnancies 8 living (and 12 mature but dead!) children. Three others, while working in lead, had miscarriages constantly, but after giving up this kind of work gave birth to healthy children.

After these revelations, confirmed also by others, it would be an exaggerated scepticism to doubt the highly injurious effect of industrial lead-poisoning on the offspring. Most remarkable observations have been made by *Rennert* with regard to children of lead-poisoned patients in a Hessian pottery district. He found in these children, apart from rickets, even in the youngest, remarkably large, angular skulls with very prominent frontal and cranial protuberances. A large number of these children suffered from convulsions, many died from them in infancy, and several became idiotic. The convulsions had the form of tonic-clonic contractions and appeared either independently or as accompanying symptoms of other diseases of all kinds.

What gives to these observations a peculiar importance is the fact that the wives of the lead-patients were in part per-

fectly healthy women, that they had not even any blue line on the gums, and that the children nevertheless had misshapen skulls and were suffering from convulsions.

This is therefore from all appearances a severe deterioration of the paternal germ-plasma resulting from the poison.

Of other trade-poisons mercury stands next to lead in its destructive effect upon the whole organism. But the observations as regards the influence on the offspring are, considering the smaller number of the trades affected (principally mirror-makers), less numerous and less uniform. The question especially whether mercury acts as an abortive, is not yet cleared up. The argument that mercurial treatment of syphilitic pregnant women does not affect the fœtus and that, on the contrary, it is helpful to it (*Brouardel*), is at all events not quite tenable. The inunction cure does not under other circumstances either, cause such severe harm to the organism as chronic mercurial poisoning. That children of female mirror-makers are often delicate and sickly has several times been described. According to *Hirt* their mortality in the first year amounts to 65%. A worker in mercury married three wives in succession of whom two had already been mirror-makers and the third became one afterwards. All the children died from atrophy except the one by the third wife which was born before she started working in the factory.

There is little justification for the statement that female match-makers and female workers in borax-factories are often inclined to miscarriages.

Much has been said for and against the influence of tobacco-work on the offspring of the very numerous women who are employed in this branch of trade. For some time it was considered beyond all doubt that tobacco acts as an abortive. One doctor went so far as to maintain that the miscarried fœtus of a tobacco-working-woman had smelt strongly of nicotine. Recent and extensive investigations (*Heurteaux* and *Ygonin*, *Piasecki*) have, however, shown that female tobacco-workers are no more given to miscarriages than other women belonging to the same class. Nor need the very high mortality among the children of these women necessarily be due to the effect of

poisons. These children often spring as a matter of fact from especially delicate parents who have for this very reason chosen this light mode of employment, and who, in addition, often lead a very unhealthy and unsteady sort of life. At all events it should not be ignored that according to recent statistics in Nancy there are 27 deaths to every 100 births among female tobacco-workers, against 17 in women working at other trades and that the number of deaths is supposed to be smaller if mothers do not suckle the children but give them the breast instead. (?) In younger women working in tobacco, disorders of the sexual organs are said to occur so often that one is obliged to assume a toxic action (*Schellenberg*). Recent reports of German factory-inspectors also emphasise the enormous infantile mortality, even where the state of health of the tobacco-workers has been found to be rather better than the average. In the tobacco-locality Goch (Rhenish Prussia) the infantile mortality as regards the whole of the population amounted the year to 0.8%, that relating to the cigar-makers to 3.0%. This shows, at any rate, that the industry is not without dangers so far as the offspring is concerned.

The last of the industrial poisons that interest us here is the disulphide of carbon which is extensively employed in the rubber-trade and which is a severe nervine poison. We need not dwell long on the nervous troubles and psychical disorders which it produces. Nor is it of any material consequence that it is more or less rightly looked upon as a cause of miscarriages. But it has a very remarkable and fully demonstrable effect on the sexual faculty. It happens, as some say, that those who work with this poison there is first an increase in the sexual desire (see *Morphia*). After a time, however, the desire diminishes, so that among the well-established signs of chronic CS_2 poisoning, complete impotence is included. Of many observers who have given attention to this chronic poisoning only one has not noticed this effect, whereas numerous others have confirmed its existence. According to the investigations of this subject, *Delpach*, who is still regarded as an authority, even structural atrophy occurs in the testicles, but this is at least not the rule. The women, too, become sexually in-

sitive, they suffer from severe menstrual hæmorrhages, and their breasts are said to become shrunken.

Occupation accidents.—We may interpolate here the industrial accidents as a special group of occupational injuries. Whereas other illness-producing causes act as a rule gradually and the individual in question can to a certain extent adapt himself to their consequences in his entire mode of life, an accident means a sudden occurrence which brings with it very often a severe psychical perturbation. In this way, and by a combination with purely physical changes and complaints, arises the extraordinarily frequent clinical picture of accidental nervous debility, of which it may be said that it plays in married life a far more serious part than the nervousness which develops gradually on the basis of other causes. In the first place accident-neurasthenics possess an irritability which makes itself apparent to their families in a most unpleasant manner. There often occur, especially under the influence of alcohol, regular outbreaks of madness. Husband and wife can no longer agree, the children are not allowed to stir, as the father easily loses his temper. These patients have, besides, an inclination to devote all their thoughts to the matter of their claim for compensation, to exaggerate their disablement and to give up, in consequence, every attempt to start work again. He, who is in the habit of seeing many that have been injured in an accident, knows what a melancholy sight their married life often is, and that it is not by any means rare for the wife to leave the husband entirely. The circumstance that there results as a rule in severe accident-neurasthenics, in consequence of the psychical inhibition, an extinction of the sexual desire, probably also plays a part in the matter. There are eminent experts who look upon this almost as a diagnostic sign, and who refuse to admit a severe accident-neurosis if the injured man has since the accident procreated a child.

Injuries of the male sexual organs through accidents are rare. The female sex is oftener affected in this respect. And here again it is the pregnant woman who is most subject to danger, for a slight over-exertion, a moderate blow may become calamitous to her. But some of the trades in which women find

employment are not infrequently associated with very much more serious risks of accidents. Thus attention was recently called to a method used in book-binding establishments and fancy-paper factories which employ women as well. The presser must seize a lever which is situated high above his or her head, ascend on a projection which juts out underneath the lever, jump down from it and throw himself or herself with full force backwards upon a mattress lying on the floor.

Overwork.—Besides these industrial injuries which after all affect only single groups of individuals or single persons, belonging to the army of workers, there remains yet one large injury to be discussed to which everyone who works is more or less subject and which causes either by itself or in combination with other unhealthy influences, most mischief to married life, namely occupational over-exertion. It acts in three forms: as work which is too heavy, as work which lasts too long and as night-work. The first two have always a health-deteriorating effect if carried on for a length of time, the third very often so, since day-time does not allow so complete a rest as the night with its absence of disturbing elements.

It is impossible, in discussing these subjects, always to maintain a strict line of division between the socio-medical and the purely social standpoints. Hunger, ill-humour, mental bluntness, all these are not symptoms of disease, but they are the auxiliaries and precursors of diseases, and we cannot therefore ignore them altogether in our observations. It is necessary to point out that the over-worked labourer loses all sense for everything which does not exert upon him a coarse sensual irritation, and consequently also for the more intimate psychical relations with his family, for a comfortable home, for the education of his children. It is a fact, for instance, that waiters who work exceedingly late hours, often do not see their children for weeks otherwise than asleep.¹ And if there is any

¹Translator's note: This applies mainly, if not exclusively, to continental conditions, as on the continent public-houses, restaurants, cafés, etc., are open, if not all night, until the small hours of the morning. But this observation applies no less to tramway-men, and such like, and the story of the London 'bus conductor who demanded the fare from a little boy and was astounded at the answer, "Why, father, don't you know me?" is probably based on fact.

thing yet which attracts the wearied and over-fatigued man, it is the public-house, the place of amusement and extra-conjugal sexual pleasures. This applies just as well to the lowest-class labourer as to the merchant or scientific worker. In addition to this it happens that men who are so over-engaged with their work and who have nothing psychical to offer to their wives, are in their turn neglected by the latter. If the wife does not find in her married life that intimate and satisfactory companionship which she had hoped for, she gets tempted to look for compensation outside her home. Even the purely sexual relations can suffer through the overwork of the husband. This can show itself in different ways. There is a form of physical fatigue which is accompanied by sexual over-irritation. The exhaustion of the nervous system is then present to such an extent only, that the inhibitions fall away, while the lower centres assume a state of irritation. Thus it is known that soldiers after a long march are sensually considerably more excited than when at rest. Attention has already been called to the sexual irritability of bakers which must be attributed more to the exhausting influence of the night-work than to the often-cited effect of the heat of the bakeries. In other persons, however, and under different circumstances overwork acts paralytically on the sexual sensations.

Mental overwork, especially, which keeps a man busy during his proper leisure hours, is also known to have a dilatory effect on the evolution of the sexual feelings and inclinations in spite of a well-preserved sexual faculty. Those who know the public best, namely non-medical "inventors," are not wrong when they address their effusions on aphrodisiacs, etc. by preference to men who have been "deprived of their finest powers by intensive mental exertions."

One of the most frequent consequences of overwork is the general nervous weakness, the hurtful influences of which as regards married life are fully dealt with in another portion of this book. If this is in its simplest form a malady which is at all events curable, the same thing cannot be said with respect to another change which springs from the same source, namely premature old age. Those who have frequent opportunities

to testify in matters relating to annuity-claims, very often see across men who at the age of 50 or 60 are absolutely worn up, bent, faded, dull, affected with all sorts of nervous complaints and degenerative processes in the vascular system. These people are easily distinguishable from those who have become prematurely old through alcoholism. They are men whom one may believe to have worked steadily all their life long. They belong very often to callings in which other injuries have also co-operated besides the hard work: metallic vapours, great heat, want of light. A classical example of such premature old age is seen in miners who at the average age of 50 are totally exhausted and suitable for superannuation, as proved by *Schöten* at the hand of official tables. In an English Blue-book it is said of the Cornish miners: "If they have reached middle age, their health goes rapidly downwards, their strength sinks visibly, and at 50 years of age the miner is, in popular language, an old man." This means that at an age at which the father of a family should find himself in his prime, many members of the working-class are already useless and in need of assistance.

The over-exertion of working-women is even more closely related to married life. Female workers begin industrial work as a rule when they are very young and their bodies are by no means yet developed. Should they be exposed to an excess of work their entire evolution is most unfavourably influenced. They become anæmic, nervous, affected with menstrual troubles, and when in after years marriage permits them to escape from further industrial injuries, these maladies are often so established that the sufferers are totally useless as wives and mothers. They are sickly from the very commencement, incapable, and when they bring children into the world they cannot suckle them. As they have not as a rule learned how to conduct a household, how to cook and how to manage children, such marriages are generally utter failures.

What degree of occupational exertion may be regarded as excessive, is of course different in different individuals. Generally speaking men are equal to more laborious work than women, and among them again, adults to harder tasks than those who are still in the stage of development. The first is

at its lowest in married women, because they have in addition to their outside work, to look after the house and the children. There is no exaggeration in saying that every married woman who works during the day at some factory or mill is overworked, as stated clearly and to the point by *Köttwitz* in his capacity as reporter to the 58th Congress of German scientists and doctors. She must either neglect the care and cleanliness of the household, the material wants of her family, the supervision of the children, or her work does her no credit, or else she escapes neither the one evil nor the other. This double burden causes her the most suffering when she is pregnant or shortly after she has been confined. During pregnancy she has in addition to her work to endure the inconveniences connected with this condition and to exercise every necessary care that that condition should not be prematurely interrupted or become dangerously complicated. After the confinement every prolonged industrial occupation affects her equally unfavourably, no matter whether it necessitates a constant sitting position during which there is an increased pressure in the abdominal cavity, or long standing in which the still lax ligaments permit a sinking of the uterus which is on account of its larger size heavier than normally; no less injurious is heavy lifting in which the abdominal pressure acts upon the internal sexual organs. There arise flexions, prolapses and inflammations of the uterus, vaginal prolapse, in brief a whole list of women's diseases. As a result of all these troubles the woman becomes peevish, irritable, ugly and old. She loses every attraction in the eyes of her husband, becomes finally unable to assist as a bread-winner—and the end-result is again an unhappy married life.

The great inconveniences which are in a married woman associated with the propagative act, naturally create one particular wish: "no more children!" And the way in which this desire is carried out in practice is unfortunately as a rule a most inappropriate one. First, the woman attempts to refuse her husband's legitimate demands; she thus practically urges him to indulge in extra-conjugal sexual intercourse, or else there are quarrels and scenes between the imperious husband, who often insists upon his right in a rough manner, and the poor

tormented wife. In the end an opportunity presents itself and often enough it is the worst possible one, namely alcoholic influence, when the barrier is broken. If pregnancy then supervenes, attempts are made to bring on miscarriage and this only tends to aggravate the evil.

But the children, too, suffer through the industrial overwork of their parents. Exhausted and prematurely used-up people cannot be expected to procreate healthy and strong children. Mothers who work at a mill cannot suckle their infants, and they expose them therefore to all the risks which an artificial and generally insufficiently controlled nutrition involves. Through the absence of cleanliness and supervision the children are attacked by skin diseases and the whole host of infectious illnesses.

All these are well-known things. But not so much is known with regard to the immediate influence which work during pregnancy exercises upon the quality of the offspring. Two French doctors (*Roger and Thiroux*) have in the last few years investigated how long pregnancy lasts in working-women, if they work during the whole of the time of gestation, and how long, if they do not work during the last months, and what the average weight of the children brought by them into the world, is. The result was convincing enough:

Of 820 women who had worked up to the time of delivery, the period of gestation (date of last menstruation-confinement) consisted of

280 days and more in	282	women
260-280 days	" 279	"
Less than 260 days	" 269	"

Of 1000 women who gave up work in the last months, or at any rate in the last month, and who were maintained at the clinic for women, the duration of the gestation-period amounted to

280 days and more in	660	women
260-280 days	" 214	"
Less than 260 days	" 126	"

Moreover, 391 primiparæ who had worked up to the confinement, had children of an average weight of 2931 grammes, whilst 298 primiparæ who had rested for 2-3 months before the event, had children of an average weight of 3291 grammes. In multiparæ the average weights of the children were 3116 and 3457 grammes respectively.

Similar results are recorded in a work by *Pinnard* compiled last year, which contains statistical tables of an equal kind.

In other words: the children of women who work through the whole of the gestation-period are born too soon and are more delicate than the average working-man's child.

On the whole, the children of working-women are situated according to comprehensive statistics given by *Cury*, alarmingly like illegitimate children as regards their mortality. In Saxony the infantile mortality, reckoned by districts, is in direct proportion to the extent of female factory-labour. The district of Chemnitz with its numerous industrial population and a very extensive employment of women, stands high up in the list. Of 100 children in their first year of life, in Dresden, 20.7 died; in Leipzig, 23.7; in the town of Chemnitz, 34.2; and in the Chemnitz district, 39.2. Chemnitz occupies as regards infantile mortality the second place in the whole of Europe, and the first in the whole of Western Europe.

There are finally in this connection the large statistics of *Mayet* extending over a period of more than 25 years, which prove that in contrast to epidemics and diseases generally, the acute gastro-intestinal affections to which infants are most subject, have materially increased in number. In localities with more than 15,000 inhabitants 287.8 per 100,000 individuals died from 1897-1901 from these diseases, which is more than in any previous quinquennial period. This is the more serious as the number of live-births per 100,000 inhabitants has during the period diminished. *Mayet* draws the simple conclusion that the high figure of the above mortality is a consequence of the greatly increased participation of women in industrial pursuits: on account of their being otherwise engaged the mothers are prevented from suckling their infants and the latter fall victims to the artificial mode of nourishment. It seems,

however, rather one-sided to attribute the higher infantile mortality from gastro-intestinal troubles to female labour exclusively. The increase of alcoholism, the growth of the proletariat among the population, and similar influences also play an important part, but that female labour is here a co-operative factor of no mean order, it is impossible to deny.

A few words on racial hygiene would seem to be here not altogether out of place. One might feel inclined to regard occupational injuries as a necessary accompaniment of the struggle for existence and as having a tendency to favour the weeding-out of the feeble and of those who possess a diminished value as propagators of the race. But with a few isolated exceptions this would undoubtedly be a mistake. For exactly like alcoholism occupational injuries create new causes of degeneration in races who would otherwise be strong and valuable. We need only think of the action of the industrial poisons which affect indiscriminately both the healthy and the diseased, of the occupational diseases of the female genital organs and of the pelvic malformations, of the shortened gestation-period which causes children of healthy parents also to come into the world delicate and sickly. The gastro-intestinal catarrhs of the infants which are produced indirectly by the injurious agencies of our industrial life also do not kill the delicate and tainted children exclusively or even principally, but equally thousands of excellently developed individuals who promise much for the future of the race, while on the other hand numbers of absolutely useless lives are spared among classes that are industrially injured to a less extent. Nor must it be imagined that individuals who were born or have become degenerate are more easily weeded out through the influence of occupational injuries than among the better situated classes, which would, indeed, bring about an improvement of the race. On the contrary, there are nowhere so many living cripples as in industrial districts. Thus there were recently numbered in the province of Saxony 1512 crippled children to a population of 2.8 millions, and about 1 times as many adult cripples, while in the Rhine province there are no less than 49,508 cripples of all sorts leading a miserable existence. It is expressly stated with reference to these unfortu-

nates that the productive cause of cripples lies far less in injury and mutilation than in disease and insufficient nursing.

Combating of the injurious influence.—Although, judging from the above remarks, we must regard the influence of occupational injuries on the married state as a very serious one, we must in our capacity of medical men acknowledge that we can do very little to combat that influence in every individual case. Occasionally the circumstances relating to our patients may be of such a nature that a warning on our part to avoid certain injurious influences of their calling for the sake of their married life, may not remain altogether fruitless. Even among working people this may sometimes be the case; there are working-women who follow a strenuous occupation in spite of the sufficient earnings of their husbands and whom judicious medical advice may, perhaps, induce to discontinue it. But in one direction particularly medical men can do much in averting untold mischief and trouble, that is with reference to the prevention of pregnancy by working-women or by women who are ill in consequence of occupational injuries. The question of the attitude of a medical man in the presence of women who do not wish to have any more children, is always a delicate and ticklish one. There are yet doctors who say that to give advice how conception may be avoided, is against all medical ethics, and that there are exceedingly few cases which justify an exception to this rule. But if we look upon medical ethics not as an unalterable law dictated by blind instincts, but as the outcome of moral feelings and of a sensible understanding of the object and consequences of medical action, we arrive at different results. It can never be the moral duty of a doctor to co-operate towards the bringing into the world of numbers of individuals who are sure to fall victims to poverty, misery and disease, for no other purpose than that there should be descendants procreated, numerous as to quantity but of a highly doubtful quality. Now we have seen and shown by figures that where the wife follows an employment or where she is in consequence thereof of delicate health, a large number of children causes her to become bodily and mentally infirm, and the children themselves to turn out more or less degenerate or to die prematurely in a great many

cases. It is also so well known that the women have recourse to unsuitable and even injurious means of helping themselves, that nobody can deny it. We think, therefore, that just as in the case of women who suffer from pulmonary, cardiac and severe nervous diseases, so in the case of those who are exposed to occupational injuries and who have already on that account lost a part of their former vigour, no medical man should refuse his advice as to how a large number of pregnancies can be avoided by lawful and morally admissible precautions. It is, however, impossible for individuals, in this instance the medical profession, to undertake the chief task in the protection of married life from the dangers arising from occupational injuries: this is the concern of the community, of the State. On principle this obligation has now been admitted by the Western European countries to a far-reaching extent. They have created protective factory laws which are in the first place intended to safeguard the health of the person employed in the various industrial occupations against the influence of avoidable injuries.¹

German legislation has in some respects done rather more than that of other countries. As regards female labour particularly, the protective regulations are in Austria much less comprehensive, and Hungary has hardly any. The protection of parturient women extends in Holland, Belgium, Portugal, Austria, Denmark and England over 4 weeks only. France has no protective arrangement of this kind at all. Belgium still allows women over 21 years of age to work underground, a social-hygienic backward state of affairs, sad to contemplate.

¹Translator's note: Here follows in the German text a reference to the various laws and regulations in force in the German Empire, all of them intended to protect workmen against accidents and disease. The last applies to almost every trade which involves a risk of some sort. Some laws fixing the hours of labour in certain trades have also been passed with a view to preventing overwork. Special laws exist for the protection of women and children. The former may not work at night time, nor may they work more than 10 hours daily, with an hour's interval of rest. Of importance is a regulation which besides prohibiting parturient women from working during the first 4 weeks after the confinement, permits them to work during the two weeks following those 4 weeks only on presentation of a medical certificate that they are fit to do so. Women are not allowed to work in mines underground. In other trades they are permitted to work under certain restrictions.

Russia has, generally speaking, regulations only against the night-employment of women. Each of the United States of America has its special laws, and several of them are very little advanced in matters relating to the protection of the working-classes.

On the other hand Germany is considerably behind other countries in other respects. Austria has introduced the normal working-day (11 hours) for all trades carried on by means of factories. In France there exists from April 1st, 1904, a working-day of ten hours for factories with mixed employees, and one of 9 hours with regard to the coal-mining industry. In Switzerland adults are allowed to work at the most 11 hours daily, on the eve of Sundays and holidays only 10 hours. Recently the National Assembly has passed a bill according to which no more than 9 hours' work is allowed on Saturdays in mills and workshops, and that must include cleaning up, and work must, besides, cease at 5 o'clock the latest. Abstention from work on Sundays is in England and North America carried out more strictly than in Germany.

As regards female labour, Switzerland stands, perhaps, first with its legislative achievements in social-hygienic matters. All Sunday-labour by women is there prohibited. Pregnant women may be excluded entirely from certain trades by the executive government. The prohibition of work associated with the puerperium begins with the end of the last week but two of the gestation-period and does not terminate until the expiry of 8 weeks. Some of the cantons go in a few details further still; partly they extend the legal protection to employees of business establishments, etc., partly they prohibit every over-exertion by pregnant women or they shorten the time allowed for work. The city of Basle is about to restrict the working-day to ten hours, and in the case of shops to 10-11 hours. In Great Britain women may not be employed in the mining industry more than 10 hours a day, and in the textile industry more than 56½ hours weekly—on Saturdays not later than 2 o'clock in the afternoon;—in non-textile industries they may not work more than 60 hours a week—on Saturdays not later than 3 or 4 o'clock in the afternoon. Italy has after a great deal of hesitation adopted

in 1902 a law relating to the labour of women and children which is full of significance. Every employment of women and children must be notified to the respective authorities and is subject to special supervision. Minors under 15 years of age may be employed only if in possession of medical certificates as to their state of health and strength, and then only in such trades as are not dangerous. Women must have with a working-day of 6-8 hours, one or several intervals of rest amounting in the aggregate to at least one hour, with a working-day of 8-11 hours, 1½ hours of rest, and with more than 11 hours' work, 2 hours of rest. They must have one full day of rest in the week, besides. Working-women who suckle their children must be allowed time for this function without any deduction from their wages, and special accommodation must be provided for the purpose, away from the work-shop.

The influence of a considerable number of occupational injuries on married life is certainly lessened by existing laws, and partly altogether excluded. Nevertheless, it is necessary that we medical men should urge the necessity of further extension of the hygienic laws applicable to the various trades. So far as Germany is concerned, more regulations are wanted for fixing the maximum hours of the working-day in exacting trades and for protecting the workers engaged in trades dealing with poisonous substances.

As regards the employment of females, the last aim should really be to keep away all married women from such work that alienates them from their domestic duties. There are already at the present day employers, for instance the well-known manufacturer Brandts in München-Gladbach, who do not employ married women under any circumstances, as they are convinced that the social evil is thereby aggravated. But it is impossible yet by laws to carry out such an exclusion in practice, as in localities where wages are low or where the husbands do not for some reason or other earn enough, poverty forces the wives to seek work too.

But for this reason we medical men must support all the endeavours which tend to shorten the working-day of female workers. From the hygienic point of view the demand of a

ten-hours-day for women does not seem unreasonable but absolutely justified. It is all very well to say that women do not need such short hours as their work is usually lighter than that of the men—but then we must not forget that they have also other duties to fulfil. Those who are not married must prepare for the time when they will have a household of their own to manage and children to bring up; it is not, therefore, sufficient to give them such chances only as philanthropists put in their way for acquiring a knowledge of these things, they must have time and opportunity for practice as well. And as to the married women, who can deny that every hour during which they are absent from their domestic duties, is a source of trouble to the entire family?

If some very experienced employers maintain that they have not noticed any deterioration in the health of women through prolonged work, this can but be attributed to their deficient power of observation, which is, after all, nothing extraordinary. Medical experience has, on the contrary, shown that in the few trades left yet in which a working day of more than 10 hours is still customary, and especially in the textile branch the general state of health is not a satisfactory one. One may retort that this is due to bad hereditary predisposition. But as *Gruber* rightly pointed out not long since, this inherited weakness is also nothing but a consequence of the over-work and under-feeding of former generations, so that a suitable mode of life and less wear and tear of the present generation would seem to be the only means by which to improve the race.

For the same reasons which prompt us in demanding a maximum working-day of ten hours, we must insist upon Saturday afternoon being a half-holiday for the women-workers. They want these few hours to put their houses in order, to bathe the children, to mend their clothes and underwear, etc., etc. Sunday ought to be a day of rest in the full sense of the word.

As doctors we ought further to try to succeed in having all industrial work by women in their last months of pregnancy prohibited. This is, of course, possible only by giving them compensation for the loss of wages thereby incurred. Whether

and how this can be done at the present juncture is purely a matter for social-political consideration.

The protection of parturient women requires in so far supplementing as the assistance given them in Germany by sick-clubs in accordance with the requirements of the law (half the daily wages) is insufficient. The increase in the amount up to the full extent of the wages which is already permitted, should be made obligatory as soon as possible. The protective regulations should be made applicable to all working-women especially also to home-workers.

Further extension is also required as regards the care, by the State and private charity, of the children of working-women, especially in the direction of suitable nourishment for those whose mothers are either prevented by their employment from suckling them or not permitted to do so on account of their occupational intoxication.

When the International Congress for the protection of working-men was sitting in Berlin in 1890 the Emperor William addressed to its members the following words:

"The prohibition of work by parturient women is closely connected with the improvement of the race. For this reason money ought to be of no importance in a question of this kind."

This dictum applies equally to all the other measures for the prevention of the injurious influences of occupational evils on or during married life. And we doctors are from our experiences entitled, as we are in the interest of the public health obliged, to call attention to those evils and to point out the remedies necessary for their removal.

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XXVI

**Medico-Professional Secrecy in Relation to
Marriage**

MEDICO-PROFESSIONAL SECRECY IN RELATION TO MARRIAGE

By **S. Placzek**, M.D. (Berlin)

Most medical men still enter upon their career full of self-denial and ready to sacrifice their lives for the benefit of suffering humanity, but without a knowledge of the obligations which the laws of their respective countries impose upon them and the non-fulfilment of which is liable to cause them serious trouble. It is true that a beginning has in isolated cases been made to fill up the gap, but the attempt is so far a very limited one, and yet there is no doubt that a doctor wants to know the legal enactments which govern his professional activity just as well as the methods by which to treat disease successfully, if both he and his clients are to be saved from possible damage of a severe kind.

Professional secrecy is to a German doctor not only an ethical obligation but one imposed upon him by law. It is prescribed by § 300 of the German Criminal Code which says as follows:

Solicitors, barristers, notaries, defenders in criminal proceedings, doctors, surgeons, midwives, chemists, and also the assistants of these persons are liable to a penalty not exceeding £75 or to imprisonment up to 3 months, if without just cause they divulge private secrets which were entrusted to them in their professional capacity, or on account of their position or business. A prosecution can take place by summons only.¹

¹Translator's note: In contrast to this distinctly expressed prohibition of the violation of professional secrets according to German law, the English law is silent on the point so far as the criminal law is concerned, and the matter is one of civil proceedings purely, that is the person aggrieved may

"Doctors" in the sense of the law are all legally qualified medical men, even though they have retired from practice (*Olshausen*, Komm. Observation 4, *Oppenhoff*. Komm. No. 51). To the same category belong also foreign medical men if they have committed the offence in Germany. What is, however, questionable is whether unqualified persons who practise the profession of medicine are also included. Whilst *Schwarze* answers the point in the affirmative, as he lays stress on the simple fact that the law imposes a professional obligation merely, *Olshausen* and *Loewe* are of a contrary opinion. (*Löwe*. Komm. zum Strafpr. p. 257.)

Besides the doctors themselves, their assistants also share the obligation. From the preamble it would appear that this was intended to apply to all those who in consequence of their co-operation, no matter how unimportant, are often just as much initiated in the secrets of the persons requiring medical aid as the principals themselves. The law regards, therefore, as an "assistant" not only an attendant, servant, nurse or any other similar person; a student, too, as long as he assists a doctor is looked upon as an "assistant," although he exercises no profession.

A "private secret" is in the first instance every statement made to a doctor as such, with the express request to keep it secret. Such a request is also considered to exist if it is apparent that those persons with whom the doctor as such is dealing, are interested in the secret being kept. The most recent definition of the word "private secret" includes in a similar manner all those observations which it is not in the interest of the person confiding the secret that they should be imparted to others, but which are on the contrary likely, if publicly known, to impair or injure his honour, reputation, or family-concerns.

sue for damages for defamation of character. As it has always been an honourable law with the medical profession that confidential statements made by a patient to the medical adviser are held to be inviolable secrets, as are also facts come to the knowledge of the medical adviser through an examination of the patient, both judge and jury are generally on the side of the latter and very convincing evidence is required to satisfy them that a medical man who has divulged secrets thus known to him, has done so for no other reason than a sense of duty. It is also for the judge to say whether the divulging of the secret was privileged or not, and for the jury to decide whether there is any truth in the statements made, if justification is pleaded.

By "divulge" is meant every kind of communication; all that is required is that the fact which should be kept secret, has been made known by the doctor to some other person.

"Entrusted" to the doctor is everything that he observes while exercising his profession, consequently all that he learns solely in his capacity of medical adviser including such points as are not really part of the illness for which he is consulted.

A communication is punishable if it is made "without just cause." This is the case if the person entrusting the secret has not given his consent to its being divulged, unless legal enactments compel the doctor to say what he knows or permit him to do so. The latter possibility is created in the first place by § 139 of the German Criminal Code which imposes a punishment upon those who being in possession of credible information at a time when it is still possible to prevent the perpetration of a crime, that such a crime is about to be committed, do not acquaint the authorities of the matter.¹

Doctors as witnesses.—Then there is a second possibility where a doctor is called as a witness before a court of justice. In this case medical men are entitled to refuse to give evidence "in consideration of what has been entrusted to them in their professional capacity." (§ 52 of the Criminal Pro-

¹Translator's note: The English law on this point is very unsatisfactory, and a definite decision is very much wanted. While communications made to solicitors by their clients are considered privileged, no such privilege attaches to information given by patients to their doctors, and the view of the police is that it is the duty of the medical profession to assist them in detecting crime. Among the medical profession, however, a different opinion prevails, and no doctor thinks that he is under an obligation to play the informer or the detective. He must not, however, do more than maintain a passive silence or else he exposes himself to the risk of being regarded as an accessory after the fact. On the whole, the position is that every case depends on its merits, and a great deal of tact is, therefore, necessary. As a well-known authority—Professor *Dixon Mann*—puts it, "the rule is, never to violate professional secrecy, but like any other rules it may have its exceptions." An exception of this sort was recently made by a doctor whose timely interference and information to the police saved some lives and brought a notorious murderer (Chapman) to the gallows; on that occasion everybody agreed that the case redounded very much to the credit of the medical profession.

cedure and § 348 of the Civil Procedure.¹) It is left "in every case to the doctor's sense of duty and discretion" to decide whether he will or not give to the judge the desired information. There can consequently be no question of a breach of the penal enactments when a doctor thinks it best not to insist upon his right to refuse to give evidence. Still, there is no final decision on the point by the highest court, so that if one wants to be "absolutely safe" he will always refuse to give evidence, unless his own conscience forces him to adopt the opposite course.

Having now given a brief explanation of the legal terms, let us consider some of the manifestations wherein the subject of professional secrecy arises, especially in relation to marriage and the married state. I cannot in the space at my disposal enter fully enough into the matter, but those who desire to become acquainted with the various aspects of professional secrecy as it affects the medical man, will find all that is worth knowing in my book "*Das Berufsgeheimniss der Aerzte*," which contains also a detailed bibliography. (2d edit. Leipsic 1898.)

1. Before marriage.

The extraordinary diversity of medical practice very often places doctors in the unpleasant situation of having to choose between the injunctions imposed upon them by the different laws and the dictates of their own consciences. The progress made in recent times has had the result that very frequently in matters matrimonial the last word is spoken by the medical adviser, and that in individual cases it is only by his determined opposition that danger to other persons is averted. Let us suppose the following case which happens often enough to every practitioner:

Collision between the law and ethics.—A patient suffering from chronic gonorrhœa tells his doctor that

¹Translator's note: This is exactly the opposite of what obtains in English courts of justice. No medical man may refuse to give evidence on matters upon which he has professional knowledge if directed by the judge to do so while a solicitor may. He has no option, and is liable to be committed for contempt of court should he persist in his refusal.

he intends to marry shortly. The doctor who knows the infectious nature of his patient's illness, warns him accordingly. He represents to him most earnestly the unhappy consequences of such reckless and unscrupulous conduct. Aware of the terrible results which an infection is likely to have in the prospective young wife, he describes to him in vivid language the chronic illness which awaits her. But the words are uttered in vain, the patient replies, perhaps, that it is not criminal negligence but external circumstances, which force him to adhere to the day fixed for the wedding.

Now, what is the doctor to do? May he in his solicitude for an innocent young life and in his anxiety to save her from certain misery, communicate with and warn the family of the bride that is to be?

Another example: A doctor knows that a patient whom he is treating for syphilis which is by no means yet extinct, is engaged to get married. To his question whether he may take this step, the doctor answers that a minimum interval of 3 years without a relapse is a comparative guarantee of a cure. The patient confesses that unavoidable circumstances have obliged him to fix the wedding-day on a near date, and that a postponement is impossible. He has not the courage to reveal the truth by an open and honest confession. In vain the doctor describes to him the risk of an infection to which he subjects his future wife and which might mean the destruction of her life's happiness and of that of the eventual family. But all warnings remain fruitless, and the question arises, must the doctor look on calmly and let a misfortune happen which he could prevent? Is there nothing else for him to do but to act in accordance with the law?

The answer is that the law admits of no exceptions and that he has no right to divulge what has become known to him in his professional capacity, no matter how dreadful the consequences may turn out eventually.¹

¹Translator's note: The whole of this article is written from the point of view of a German doctor, and is therefore not applicable to English and American conditions. It makes, however, interesting reading and for this reason I have translated it practically in its entirety.

But may the law compel us ever so mercilessly, there is another law, namely the ethical principles which govern our actions, that must be our guide. In the full consciousness that he can render help and prevent misfortune, is there a doctor who will not brave the risk of legal punishment rather than countenance a disgraceful conduct?

Now, is there no way out of the difficulty? Must a doctor if he is not desirous of martyrdom for the sake of his conscience, permit unhappiness to overcome innocent people in every case? Is he not able by a veiled revelation of the facts to warn the people concerned, to arouse their suspicion that everything is not well, and to cause them to break off the contemplated alliance, without incurring the penalty of the law?

It cannot be denied that such a possibility exists in isolated cases, but the proceeding is, nevertheless, not without its dangers, although *Brouardel* is of a different opinion (*Le secret médical*, 1887, Paris). He succeeded in a case where the future father-in-law of the patient was praising the latter and dwelling upon his excellent prospects, in convincing him of the necessity of life-insurance on the part of the prospective bridegroom. He pointed out to him in general words that in similar cases in which his advice had been disregarded, most disastrous consequences had resulted, and how through unforeseen circumstances the families had been left totally unprovided for. As in the case in question, the future son-in-law who was suffering from syphilis, naturally refused to be medically examined, the projected marriage fell through.

Brouardel's method was certainly very ingenious, and he no doubt did not by it reveal a secret entrusted to him, but a breach of confidence towards his patient he committed, nevertheless. No amount of rhetoric can persuade us of the contrary. Still, *Brouardel's* attitude has received enthusiastic support in several quarters. *Preuss* considers it by far the best way out of the unpleasant difficulty, although he himself supplies a very strong proof that it is the circumstances of each case which must guide one in arriving at a decision and that *Brouardel's* proceeding is not a universal panacea. He managed in one case to prevent a marriage by pointing out to the individual in question that

a person who has sexual intercourse with another person while knowingly suffering from syphilis and who thereby infects that other person, is liable to punishment for bodily injury with criminal intent in accordance with § 230 of the German Criminal Code.¹ It is true that he only succeeded in preventing the legitimate marriage.

Nevertheless, there will always remain occasions when none of these remedies will be of any use and when the doctor will find himself in the dilemma of having to do violence to his personal humanitarian feelings or to break the law. A case from the practice of an American doctor illustrates clearly such a dilemma.

A young lady, 26 years old, suffering from tuberculosis of the kidneys asks the doctor: "May I marry? For the last seven years I have been half-engaged and I have always refused to get married. My intended husband went to America 5 years ago, since when he has written to me every year to come over so that we may become husband and wife, but I did not want to go. Now I have come, but I am afraid I am too ill to marry. What shall I do?" The doctor, taking into account the interest of the would-be husband and the probability that the married life of the couple in question would be an unhappy one, answered: "As long as you have refused to marry until now, you should continue to do so; at all events you must wait for some time yet." As the diagnosis was a difficult one, it might have been cruel on the part of the doctor to give a categorical negative reply and thus destroy the girl's future happiness. But supposing the girl would have wished to get married, would it have been proper for the doctor to reveal to her intended husband, either spontaneously or upon being questioned, what the state of her health was? No, the law forces him to be silent, although the interest of the community undoubtedly dictates that everything possible shall be done to prevent the spread of tuberculosis.

In another case of which I know, the prospective wife

¹Such a punishment (to 5 months' imprisonment) took place on June 6, 1903. *Ministerialblatt für Medizin*, etc. Novemb. 16, 1903.

brought her intended husband to the doctor so that he could be treated for his highly pronounced nervousness, as "they were going to be married in a few weeks." The extraordinary lack of understanding which is very often observed among the lay public in such matters, had allowed in this case the well-marked disorder of the speech characteristic of general paralysis, which the examination revealed, to pass unrecognised.

A disclosure of the whole truth would, in view of the passionate nature of the intended female partner, have been followed by most disastrous results, and a communication to her parents was prohibited by law. Whether the simple dissuasion from getting married in such a short time was of any use, whether the explicit statement that the patient required at the very least a prolonged recuperative period prevented the marriage from taking place, seems to me, judging from the incredulous smile of the would-be bride, rather doubtful.

That a frank communication on the nature of the complaint is a hazardous undertaking, that the fear of suicide is not without foundation, we see often enough from the columns of the daily press. The head-lines "A pair of lovers in death united" are not infrequently explained as I had occasion to read only quite recently, by concluding sentences such as this: "He wished to take his life on account of an incurable complaint from which he was suffering, and his affianced wife decided to accompany him into the next world."

What is the condition of affairs under different circumstances? A doctor receives one day a visit from a man who informs him that he has not come to consult him, but to ask him for his professional opinion as to whether a certain patient of his is a fit subject to marry his daughter. In cases of this kind *Brouardel* adopts a very convenient mode of procedure. He interrupts the questioner immediately with the words: "Do not mention any names, if it is a case of marriage, as I never answer such questions. But I do not wish you to interpret my words in an unfavourable sense as far as the person you are interested in is concerned. My rule is silence and to that rule I make no exceptions."

No doubt *Brouardel's* method is perfectly correct in the eye

of the law, and as such to be recommended. Nevertheless, many a medical man would wish to emulate the noble words of *Dr. Gaide* who advises a totally different course. This highly-esteemed Paris physician utters an energetic protest against this legally correct attitude. He says: "I should under such circumstances have no courage to obey the law, my conscience would command me to act differently and I should reply without hesitation: 'Do not give your daughter to that man.' I should not add another word, I should be imbued with the consciousness that I have not revealed a professional secret. But should the law punish me, nevertheless, I should call all the fathers of families to be my judges, and with head erect I should in my turn accuse the court which dared to punish me because I desired to save a young wife and her eventual offspring from an almost sure infection."

Brouardel also confesses that he feels sincere admiration for this noble sentiment, but he cannot help looking upon such a mode of action as punishable, no matter how worthy the motives may be. It remains—and about this there can be no doubt—a breach of confidence.

Although in a similar concrete case I should follow *Gaide's* example, I must agree with *Brouardel*. If anyone wishes to confide a secret, he naturally chooses among his friends only the one upon whose discretion he can rely. A patient has not such a choice, he does not know the ethical principles of his medical adviser, he only knows that the latter is bound to secrecy. This is why *Gaide's* attitude is all the more deserving of punishment. *Grassmann* (Münch. Med. Woch. 1899, No. 44 and 45) is quite right in saying that the most superficial consideration of the consequences of such conduct as *Gaide* advises is sufficient to show how easily the whole principle of professional secrecy would thereby be endangered.

I think I may therefore recommend to my medical brethren to preserve in a dilemma such as the above, absolute silence, if they do not wish to expose themselves to any danger. But if their inner consciousness, if a noble instinct impels them to do their best for the benefit of humanity, no one can point the finger of scorn at them, no one will think of them any the less,

although—and of this they must never lose sight—they undoubtedly commit a punishable offence.

The circumstances are, of course, different if a medical man gains the conviction that an individual who is about to marry is suffering from a disease, not in his capacity as medical man, but from information derived outside his profession, as one of the general public. In such a case he naturally has every right, if his interest lies that way, to convey his information to the parties concerned, for no secret has been entrusted to him in the exercise of his profession, and the communication made by him is not therefore illegal. *Grassmann* was actuated by this opinion in a case where the sister of an intimate friend of his was about to become engaged to a young man whom he (*Grassmann*) had on some festive occasion seen to be seized with an attack of hæmoptysis. Not being the medical adviser of the young man in question, *Grassmann* considered it his duty and his right to inform the relatives of the young lady of what he had observed.

The following situation out of which the medical man concerned extricated himself apparently with some difficulty, is a very peculiar one. (*Aerzt. Zentr. Anz.* 1897, No. 45.) He had treated a girl whose character was generally not above reproach, for miscarriage. Some time later as she was about to get married, the clergyman who had been asked to officiate at the ceremony received one day before the wedding an anonymous letter informing him of the bride's antecedents. The clergyman asked the doctor to tell him in confidence, if he could, whether this communication was true. If true, the girl could not be married in veil and wreath—the emblems of pure virginity. The doctor replied quite correctly that the law forbade him to make any communications, either positive or negative, upon anything which occurred in his practice. As to what conclusions the clergyman might draw from such an answer, it was not his business to inquire into, though it is obvious that there is only one conclusion possible. Yet, it is clear that no clergyman would simply on the strength of such a guarded answer decide finally to blast the character of a young woman by refusing to marry her in veil and wreath, and he would at

least consider himself obliged to make further investigations. Besides, the medical man might under circumstances of a like nature try and obtain his patient's consent to his supplying the information wanted from him.

Authorised communications.—What should be the attitude of the doctor if he receives from his patient a direct request to disclose the secret entrusted to him? Is he thereby freed from his responsibility?

According to German law the answer is in the affirmative. This being so, I cannot understand the standpoint of *Moll* who declares that the consent of the party entrusting a secret is not sufficient to relieve the doctor of his obligation to keep that secret. His argument is that if a doctor refuses to give any information unless he has the consent of the patient, the absence of this consent is a sign that the patient suffers from a complaint which he does not want others to know anything about. For this reason *Moll* is of the opinion that information should be refused under all circumstances, but I do not agree with this view and I regard communications made with the consent of the person concerned of enormous benefit all round.

We have already seen of what importance the decision of the doctor is in those cases where he is anxious to prevent misfortune, but circumstances may also arise where even an unpremeditated word on his part is capable of doing untold mischief. The following very instructive case is worth mentioning here:

A gentleman brought his fiancée to a dentist who supplied her with a set of artificial teeth. The dentist meeting the gentleman accidentally some time afterwards asked him how his intended wife was satisfied with the teeth. The immediate result of this was the breaking-off of the engagement. The dentist had naturally thought that the young lady's intended husband having brought her to him was aware of her defect, his surprise was therefore the greater when he realised what he had done by his unpremeditated question.

This shows how guarded one must be even in such professions which refer principally to matters of a cosmetic nature. Had an action been brought in this case there is no doubt that it would have gone against the dentist.

The doctor as an expert adviser.—I have already said that *Brouardel* is without exception silent to all questions of a non-consultative character. But although his attitude is very often correct, it cannot be said that it is so in every case. The modern tendency of fiction to give rise to vague fears by means of the oddity of the subject, by a confused knowledge on matters relating to heredity and the like, is not infrequently the cause which induces the relatives of hereditarily-predisposed persons who are about to marry, to apply to an alienist for his opinion as to whether the contemplated marriage is advisable or not. I can see no reason why the doctor should not listen to all the facts communicated to him under such circumstances. Nor do I think that he need hesitate, if necessary, to express his most energetic opposition, seeing what benefit he thereby confers on future generations, and not even the knowledge that his counsel will often be disregarded, should deter him from giving utterance to his opinion. For his function is merely that of an adviser.

But he must make use of his right to maintain professional silence where the relatives of one of the parties to a contemplated marriage supply him with particulars concerning their own family expecting in return information on the family of the other party who may be or who may have been under the doctor's treatment. If the decision of the inquirer depends upon this information, it is beyond the doctor's power to assist him without breaking the seal of the professional secrecy.

2. *After marriage.*

As an illustration of the corresponding state of affairs, let me mention the following tragic event.

A healthy young woman was, in the first night after her marriage, infected by her husband with gonorrhœa. Shortly afterwards a gynæcologist found it necessary to remove by laparotomy a purulent oophoritis and salpingitis. This severe transformation of the organism destroyed an excellent and hopeful life, mutilated a robust woman and condemned her to permanent infirmity.

Is not, the doctor asks, the disgraceful conduct of her husband a crime, though it goes unpunished? Does no public prosecutor raise his avenging voice? The answer is, no. It was in the exercise of his profession that the medical man in question acquired a knowledge of the facts of the case, otherwise he would never have known anything about it. May his indignation be ever so just and comprehensible, the law compels him to maintain absolute silence.

Incomplete relief from obligatory secrecy.—

Is an alteration of these conditions possible under different circumstances? Would the doctor's attitude remain the same if the wife in her endeavours to break the chains which bind her to her wretched husband, demands from her medical adviser a disclosure of the state of affairs before some court of justice?

Where the court alone requires his testimony, the doctor must ask himself whether he ought to make use or not of his right to refuse to give evidence. Where the wife alone calls upon him to reveal the secret in his possession, he must take into consideration whether she was the only party who entrusted that secret to him or whether the husband had a share in this transaction. This would certainly be the case if it was at his instigation that the doctor was consulted. That being so, the general opinion is that the German criminal law relieves the doctor of his obligatory secrecy even if the husband does not authorise him to give evidence. The question is, however, how do matters stand if the husband explicitly forbids the doctor to make a statement? As the answering of this question is of the greatest importance I think it advisable to narrate here the following real occurrence.

A married woman sues to be divorced from her husband, and she calls as witness her doctor to prove that her husband has infected her with syphilis. As a matter of fact the doctor had treated for syphilis the wife and her child, but not the husband. The wife expressly relieves the doctor of his professional obligatory secrecy, but the husband just as expressly forbids him to make any statement whatever. The consequence is that the doctor refuses to give evidence at the trial. He is called again, this time on the point whether he has a right to refuse to give

evidence. The president of the court declared, "You must give evidence, you have no right to refuse so." The doctor replies just as categorically, "I reserve myself within his right in refusing to give evidence, as it was the husband who had brought him the secret, and the secret was consequently his as well. The law forbids the secret be divulged without his sanction, and he alone only refuses to give but he actually prohibits the president thereupon declares that the court orders the doctor as to what he ought to do, and he asks the doctor at the time whether he is willing to give evidence. The doctor replies with an emphatic "no!" On the application of the president, the court is asked to decide that the doctor should decide whether the wife and child are syphilitic or not afterwards—it took all this time for the court to decide the question—a lengthy judgment was delivered by the Tribunal of the Provincial Court of Maine. The doctor was bound to give evidence as regards the wife's illness but not as regards that of the child. The reasons assigned by the court in its judgment were that the doctor was perfectly in her right in demanding that the wife as far as her own illness was concerned, the doctor should give the infection came from, being of minor importance, answerable by the witness. As to the child, the court lay on the part of the doctor seeing that it was a question of his professional obligation and that it was not in this case the father, refused to grant the necessity of the doctor's evidence.

This noteworthy judgment is, however, the opinion of one court only. Whether it is the opinion of I am rather inclined to doubt, my opinion is that the doctor in question acted quite correctly in obliging the husband to give evidence so long as the husband who brought the communication of the secret was opposed to the same.

Compulsory medical evidence. The courts of justice are capable of delivering most extra-

¹October 22, 1901.

we see for instance in one emanating from the Hanseatic Superior Court. The latter has laid down the principle that the married partner who is in danger of being infected by the other partner with an infectious disease, may force his diseased partner to relieve his or her doctor from his obligatory professional secrecy, and that where he or she refuses to do so, the courts may under certain circumstances, so relieve the doctor concerned. The case lay so that Mrs. X. sued for divorce on the ground of adultery, and in order to prove the adultery she called Dr. Y. as witness to testify that he had attended her husband since his marriage for a severe and supposed incurable disease which he could have acquired only through an immoral mode of life. Dr. Y. when called refused to give evidence and justified his refusal by his professional obligatory silence from which his patient would not free him. The court was, however, of the opinion that the wife was entitled to the doctor's testimony and by an interlocutory judgment against Dr. Y. it was decided that he must give evidence. The judgment was brief and stated as follows:

"The right to refuse to give evidence has its justification in the confidential status of the doctor, and its object is to protect those who have occasion to confide in him. The doctor himself has no longer a legal interest in the matter if his patient frees him from his obligatory silence. The right of refusal to give evidence does not, therefore, apply if the patient has no legal claim to silence. Such a case exists where, as in the one under consideration, a husband suffers from a sexual disease which endangers the wife, because the natural object of the married union presupposes that no married partner should imperil the health of the other married partner. But where such an obdurate and almost incurable complaint comes into question, the wife cannot be expected to rest contented with what the husband chooses to tell her; she has, on the contrary, a right to demand full and instructive information which can naturally be given to her only by the medical man in attendance. The husband cannot consequently insist upon the doctor's silence towards the wife, as he has no right to deprive her of the possibility to obtain reliable information. If the husband refuses his

consent to the doctor giving evidence in court, the judge may pronounce this refusal as being legally without justification and compel the doctor to state what he knows."

Against this judgment Dr. Y. appealed to the highest court so as to have this important point finally settled, and the result was that his attitude was declared to have been correct and the decision of the lower court wrong. The reasons were somewhat as follows: There can be no doubt that the doctor who ascertains in his patient a sexual disease, becomes possessed of a private secret of such patient, the disclosure of which to a third person is, unless there are absolutely special indications to the contrary, not permitted. On the other hand it cannot be denied that, if this third person happens to be the husband or wife of the patient, circumstances may arise which may make it appear perfectly justifiable for the doctor to give to such husband or wife the information in his possession notwithstanding the patient's instructions to the contrary.

For just as there are legal obligations which may take precedence of the obligatory secrecy, so we must admit that there are higher moral duties to which the obligation of silence must give way. Thus for instance it may seem necessary to a doctor to inform a married woman of the sexual disease of her husband so as to prevent, by all possible means, her becoming infected. But the court below had gone too far in these generalities and erroneously assumed that married partners have a right always to demand from each other full information respecting their state of health. As regards Dr. Y. it might be said that a higher moral duty exists in his case too, making it desirable that he should not refuse his testimony. It must, however, be borne in mind that this testimony is not required in the interest of the petitioner's health, but in order to prove adultery and to facilitate the divorce from her husband. And although some might see a moral object in helping a woman to divorce her husband, if the latter has behaved cruelly to her, this is far from being a higher moral duty when compared with the obligatory professional secrecy, and might be extended to so many similar situations that there would be no room left at all for the principle of professional secrecy.

The concluding sentences of this judgment are of such immense importance that they deserve to be stored in the memory of every medical man. They show that the obligatory professional secrecy pursues a higher moral object than the endeavour to assist an injured woman in her desire to rid herself of a bad husband. But they also show that the Mainz judges in the above-mentioned case were wrong in forcing the medical man concerned to give evidence in court.

The employment of medical documents in courts of justice.—We may thus draw the conclusion that a medical man must consider very carefully whether he should communicate anything to a married woman respecting the cause and nature of her husband's illness without his permission, even if the communication appears desirable in the interest of the patient himself. The doctor can never know to what use his verbal or written information may be put under circumstances of a different character. In a divorce case which came recently before a French law-court, the wife found to her advantage to lay before the judges the letters from the medical adviser of the family. The French Court of Cassation, however, declared the proceeding as inadmissible¹ on the ground that although it might be allowed to a doctor to write confidential letters to the wife of a patient who is under his treatment, as to the state of the patient and the cause of the disease, if such a course is in the interest of the sufferer, these communications can under no circumstances be made use of against him. The doctor especially is by his obligation to secrecy not permitted to give his consent to such a publication.

Whether a German court of law would under similar circumstances have come to the same conclusion, it is not possible to say with certainty. Perhaps, it would, as the general principles of law which were here involved, apply in Germany as well. I should like to add expressly that a doctor, like all persons who are entitled to withhold their evidence, cannot by

¹13 July, 1897 (Pand. franç. 1897. I 526). Wien. Med. Woch. 1898. No. 22.

force be compelled to produce any documentary evidence. He is consequently entitled to refuse to produce his case-notes.¹

It is therefore best for every medical man to adhere as strictly as possible to the rule of professional secrecy. *Bona-fides* will in a serious case not protect him, but may easily cause him very great unpleasantness. As an illustration of such a condition of things let the following painful experience of a Berlin practitioner serve as a warning.

A married woman consulted him on account of a vaginal discharge. An examination revealed a condom which had been left behind in the vagina. The doctor removed it and recommended vaginal injections. Meeting shortly afterwards the lady's husband with whom he happened to be on friendly terms, he jocularly warns him not to be so careless in the future. The confusion and astonishment of both men may be imagined when the husband assured the other that at the time in question he had not had any sexual intercourse with his wife at all. The result of the indiscretion was the dissolution of the marriage.

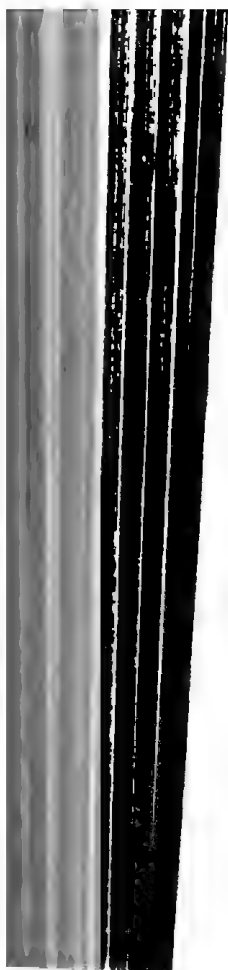
That such a breach of professional secrecy is bound to have most serious consequences as far as the doctor is concerned, is obvious, and yet the offence was committed unintentionally and in good faith. It is, however, far worse if such an act takes place with premeditation. In this connection, too, there is no need to construct a possible case. The events of real life supply plenty of material.

We all remember the sensational case in which the well-known London gynaecologist *Playfair* was mulcted in the heaviest damages ever known for divulging a professional secret. He had forbidden his wife to continue her friendly relations with a lady connected with them by marriage, because he ascertained during a consultation that she had had a miscarriage which could only have been the result of an adulterous intercourse. At the same time he communicated his observation to the lady's brother-in-law who was allowing her £500 a year since she had left her husband in Australia and come home. This allow-

¹S. *Plazcek*, l. c. and *Beling*, "Die Beweisverbote als Grenzen der Wahrheitsforschung im Strafprocess," Breslau. *Schlatter*.

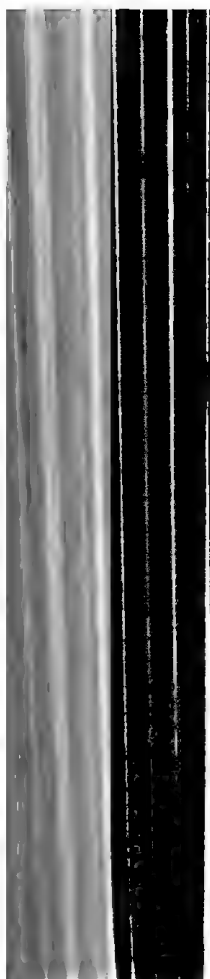
ance was stopped in consequence of the communication from *Playfair*. Thereupon the lady, assisted by her husband who returned from Australia, brought an action for slander against *Playfair* who was condemned to pay damages to the amount of £12,000. The experts *Spencer* and *Williamson* did not find fault with *Playfair's* diagnosis, but they criticised his professional conduct, and although the English law has no special clause imposing secrecy on medical men, this severe pecuniary punishment was inflicted upon him with the result that it did considerable damage to his position and reputation.

The preceding remarks give but a faint idea of the importance of professional secrecy in relation to marriage and the married state, but they suffice to remind one at the same time of the enormous interest which the subject possesses from the standpoint of medical practice generally.



XXVII

The Economic Importance of Sanitary Conditions in Relation to Marriage



XXVII

THE ECONOMIC IMPORTANCE OF SANITARY CONDITIONS IN RELATION TO MARRIAGE

By Rudolf Eberstadt (Berlin)

I. The postulate of marriage.

Importance of the subjective views of marriage.—As *Senator* has already pointed out, we can distinguish three stages of the relationship between the medical adviser and the conditions of married life: (1) the contraction of marriage, (2) the preservation of the married state, and (3) the dissolution of marriage. In each of these three cases the doctor will often need more than medical knowledge; he will, as has already been stated by several of the contributors to this work, be consulted oftener perhaps by his patients on psychical than physical complaints, seeing that the prosperity of married life depends frequently enough on the preconceptions and suppositions which husband and wife entertain towards one another. Disappointments, misunderstandings, and antipathies are often nothing but the result of wrong views and standpoints which the doctor more than anybody else has it in his power to dispel. We may therefore begin with a few brief remarks on the foundations of matrimony.

Criticism of traditional conditions.—Every age raises points which appear to it especially in want of an explanation. For it is given to no civilized nation to formulate its institutions anew and on virgin soil; every period inherits institutions from periods preceding it, and these must be made the best possible use of. Living generations find themselves sur-

rounded by conditions which they have not created for themselves and which they often regard as unjustified and unjust.

Modern doubts on the subject of marriage.

—At the present time it is marriage particularly, in the form handed down to us by our predecessors,—the so-called traditional marriage—which is very often characterised as insufficient and contrary to the most liberal conception of the idea of a joint life. Quite a number of far-reaching problems are raised by this doubtful attitude on the subject of marriage, and there is no doubt that the tendency to “meditate on the matter,” the absence of confidence in the married state, has had most important results in regard to many of our social conditions. What are the legal and moral motives of marriage in its present-day form? Is the position which law and morality assign to-day to man and woman in their capacity of husband and wife compatible with the natural sense of justice? And is there any natural or moral justification especially for the difference in the status of husband and wife?

Jurisprudence and juridico-historical investigation have devoted but little attention to the questions discussed here. But the same cannot be said with regard to sociological literature, and we may say that the views generally prevalent to-day on matters matrimonial are mostly due to sociological utterances.

Sociological points of view.—There are above all two factors which present themselves for sociological consideration, first the superior position of the husband from the standpoint of the marriage-laws and secondly the stricter view which prevails on the point of the wife's pre-nuptial chastity and conjugal fidelity. Man has among the generality of civilised nations a legal superiority in the marriage state: not satisfied with this alone he demands from woman sexual abstinence before marriage and absolute fidelity in the course of it. The woman who offends against these injunctions is despised and condemned, whilst for himself man does not acknowledge the same obligations or at least not the same unpleasant results on their contravention.

Further development.—From the consideration of these circumstances sociological investigation has arrived at the

conclusion that marriage in its present-day form has developed from lower forms and that the prevalent right of man is only the remainder of the older brutality and barbarism.¹

"Traditional marriage" appeared therefore only as a single stage of development in the progress of human institutions, a stage which is destined to give way to the next higher form of joint-cohabitation. In this further natural development it is first of all necessary that law and morality should place man and woman on a footing of perfect equality as far as their sexual relations are concerned; so soon as this equality shall have been established and irregular sexual intercourse on the part of woman will have ceased to be looked upon as derogatory, free love will, in the opinion of the evolutionist school, take the place of the traditional form of marriage.

Influence of the theory on man and woman.

—It must be at once admitted that there can be nothing more oppressive to a thinking and sensitive woman than the unexplained and therefore brutal-looking difference in the right of sexual intercourse of man and woman. May the emancipation of women bring them ever so many single concessions—against the difference in the interpretation of the word "honour" their moral sense will always rebel. When a woman is thus persuaded that she is unjustly treated she cannot regard marriage otherwise than with dissatisfaction. To man, too, the view that the difference in sexual honour rests only on force and brutality, is a great danger; a man may by such a conception of the matter easily be misled into refusing to acknowledge that "traditional marriage" imposes any moral obligations upon him.

Position of man in the law on marriage.—

Is it a fact that the evolution of marriage into its present-day form is nothing but a history of man's power and greed? Has man succeeded by his superior force in acquiring for himself

¹The first part of the hypothesis, namely, the derivation of marriage from lower forms, has already received at the hands of *Westermarck* most appropriate opposition, so that I have no need to go more minutely into this part of the subject. Compare *Ludwig Stein*, *Die soziale Frage im Lichte der Philosophie*.

a privilege from which he arbitrarily excludes woman? Sociology should have made it its principal task to clear up this point. Hypotheses, which science has already partially discarded, are of no good. As far as I know *Herbert Spencer* is the only sociological writer who has attempted to explain the prejudice which favours man in sexual matters. He does so by reference to the double marriages of the biblical patriarchs:

"Were it not for the ideas of sacredness associated with that Hebrew history which in childhood familiarised us with examples of polygyny we should probably feel as much surprise and repugnance on first reading about it as we do on first reading about polyandry."¹

That such an explanation should have been attempted is rather surprising. It is difficult to see how the marriage of the patriarchs can be compared with polygyny. The biblical example proves exactly the opposite of that which is intended, and the contrary could hardly have been better demonstrated. The patriarchal marriage just shows the natural difference between man and woman as regards sexual intercourse. Let us adhere to the example of the patriarchal marriages: Ishmael as well as Isaac has his father and his mother: Hagar as well as Sarah knows her husband and her child. The marriage of one man with two women possesses the foundations of family-life. But this would not be the case if a woman lived with two husbands. The sanctity of biblical history has not the slightest connection with these purely natural things.²

Foundation of monandry.—Our problem cannot be solved in this way. The disreputableness of mixed intercourse on the part of woman rests—if we proceed first historically—on a totally different basis. It is in the first instance the horror of the *commixtio sanguinis*, of the mingling of the blood, which civilised nations have always looked upon with disgust. A woman who cohabits sexually with several men destroys the line of succession, her children are fatherless. That a child

¹ *Principles of Sociology*. Vol. I. p. 682.

² Moreover, we consider the form of the patriarchal marriage of an entire sanctity, that we punish the same most severely.

knows its mother is but natural, that it should also know its father is the business of law and morality.¹

According to the form in which a woman practises mixed intercourse, she is looked upon with contempt, scorn or disgust. The child, too, suffers from the consequences of this state of affairs morally, and often also physically. Irregular extra-conjugal intercourse is bound to have in most cases the same results as the mixed intercourse. Here also there is no guarantee for any material and psychical attachment between mother, father and child. The historical views on mixed and irregular intercourse result therefore in the first place from natural suppositions.²

Different positions of husband and wife.—

It is not therefore the brutality of man which has imposed upon woman a higher obligation, but it is the work of nature herself. Nature has constituted man and woman differently as regards the consequences of sexual intercourse. To woman

¹The assumption that the mixed intercourse of woman is reprehensible only because man desires heirs and the perpetuation of his race is so ridiculous that it hardly deserves any attention. It is sufficient to state that the opinion on the matter remains the same, whether it refers to heirs or to male or female children not entitled to inherit.

²Sexual intercourse may also be practised before marriage under the same obligations as after marriage. Pre-nuptial intercourse is occasionally permitted by popular custom or at any rate not considered dishonourable, if an engagement or promise of marriage has preceded it and there is an intention to marry. (Compare the descriptions of old Westphalian customs in *Immermann*, Oberhof, Edition 1858, p. 225). In the country and also in towns marriage is often resorted to when the girl is already expecting to become a mother. By a census undertaken in connection with two marriage-registries it was established that in Berlin more than 40% of all legitimate first-born children are conceived pre-nuptially. Compare Prof. *E. Hirschberg*. *Bilder aus der Berliner Statistik*, Berlin, 1904, p. 5; *Volkswirtschaftliche Zeitfragen*. No. 200.—Prof. *Hirschberg* observes in this connection with perfect truth: "Marriage before the registrar is a formality which in the eyes of large classes of people is of considerably less importance than the betrothal. Besides, many marriages are solemnized only because a child is expected and one must admit that this is a very healthy sign of a sense of morality. The promise of marriage is considered as equal to the act of marriage itself."—It hardly need be added that there is nothing in common between mixed or irregular intercourse and that of individuals who are engaged to marry each other.

only is the fruit thereof entrusted. But he who has special responsibilities, has also special obligations. Certain offences against conjugal intercourse are judged with greater severity if they are committed by the husband, others, again, especially those which affect the propagative functions, are regarded with more seriousness if the wife is guilty of them. Man and woman occupy for physical and unalterable reasons different positions in sexual life; seduction, abuse, wife-desertion and adultery are in man punishable both by law and morality. Woman on the other hand loses her honour through mixed and irregular intercourse as such only, because nature herself prohibits this mode of intercourse so that the moral and material ties binding together mother, father and child should not be unloosened.

Object of the devolution.—Historical and physiological reasons account therefore in civilised nations for the postulate of marriage, as for the greater responsibility of woman in the matter of sexual intercourse. The question, however, is whether this involves any detraction from the female honour. This is doubtless the case as a rule, where according to prevalent opinions woman constitutes, and is meant to constitute, nothing else but the bearer of children. And although nations which entertained such views, have also reached a high degree of civilisation, we nevertheless regard this position of woman as less desirable and as a sign of reactionary and inadequate ethical sense. But for all that, the further evolution of woman out of the lowest conditions of civilisation must not be looked for in sexual equality, but in mental equality. The husband must under no circumstances on the strength of the natural differences dictate to the wife to rest contented. In such marriages neither he nor she can attain a degree of perfection. The more we hold fast to the principle that certain differences in the sexual honour are founded on nature, the more we transfer the further evolution of marriage into the domain of the mind and of ethics.

Influence of ideal representations.—But this further evolution raises another question. No one knows better than a medical man that besides the real conditions, the ideal world must also be taken into consideration. We have already

pointed out above that ideal views and standpoints may be of the utmost importance to the conditions of married life. We have therefore to ask ourselves: Is it possible for future generations to effect a radical change in the circumstances discussed here?

It is conceivable to imagine ourselves transported into a future society which has wilfully discarded marriage in its present form and—as it is prophesied in many quarters—disassociated the married state from all legal consequences. There is no denying the importance of such a future ideal even to our present way of thinking. Would such a society which accords to marriage no legal privileges, no longer know conjugal life as we know it to-day? Is it possible that law and morality could ever regard free love as equal or superior to marriage?

We may safely assert that no civilised nation will ever know such a state of things. In the first place, no future society can escape the natural preliminaries—the peculiar position of woman as regards the conception and preservation of the embryo—and these must continue to exert their full force; nay, they must tend to grow in influence, as with the disappearance of the legal protection the ethical safeguards will require increasing.

Influence on the law.—Nor would it be possible to change for good those formal notions which determine the standpoint of the law. Those living in wedlock must necessarily always retain the upper hand over those living in irregular sexual conditions. Whether one is a thorough Darwinist or a strict believer in the Bible, the result must always be the same. The believer in the Bible will believe that marriage is a divine institution which is and must remain indestructible. The Darwinist must know that close family-combinations have a natural advantage over others and that they will always succeed in putting into force their views of law and morality. The respective numbers would form no criterion, although the individuals living in matrimony would always be in the majority. Before the combined forces and natural advantages of the regular families, the horde of the irregulars will fly and get scattered like chaff before the wind, without being able to exercise any permanent influence on the constitution of law and ethics.

The theory of evolution towards freer forms of sexual intercourse is being preached time and again so often and with such self-confidence as to give rise almost to a feeling of nausea. But even the historical observations made in this connection are in various respects incorrect. The physiological reasoning, too, is defective, and this is probably the severest loss to the whole hypothesis which appears in consequence untenable or at least in want of a radical transformation. There is also a third factor to be reckoned with. The evolutionist doctrine demands in all seriousness a modification of the law.¹

The preferential value of unrestrained sexual relations is of secondary importance. The object of the main campaign is to bring about a change in the laws regulating the traditional form of marriage. But such a change is, no matter how society is to be constituted in the future, impossible. This is due not to the prejudices and desires of man, but to natural conditions.

Criticism of the present-day social arrangements, especially of married life is justified, desirable and necessary; but it must not mislead, it must not be wrong in its premises, it must not aim at erroneous objects or attempt utopian reforms. The belief in the development of the relationship in the sense of free intercourse can bring to the present generation nothing but unrest and unhappiness, but even from a purely speculative point of view it lacks every justification.

In its legal basis marriage is incapable of further develop-

¹The evolutionists show themselves here, as always, most rabid legislators. Thus one of the more recent works says: "The only point which offers a permanent opportunity for the law to interfere, and in which the public authorities must undoubtedly have something to say, is the question as to the children. Every marriage-contract and every petition for divorce ought to contain satisfactory stipulations with regard to the care and support of the children under all circumstances, before they could be sanctioned by the public authorities." (*Carpenter: Wenn die Menschen reif zur Liebe werden*, 2nd edit. Leipsic, 1902, p. 222.) This means that in the society of the future everybody will be in a position to deposit sufficient securities to be devoted to the maintenance of an eventual family. Otherwise the "satisfactory stipulations" would have to assume such a severity that all the obligatory features of the traditional marriage would be mere child's play in comparison. (Compare the opposite view of *Ika Freudenberg*, in *Monatschr. "Die Frau"*, Novemb., 1903.)

ment. This further development lies exclusively on its ethical side which changes in accordance with the times. With the higher obligations which we impose upon the single individual, the claims which man and woman make upon the married state are bound to increase. This further evolution can, however, result only in rendering the conjugal and family ties firmer, not looser.

II. The different estimations of marriage.

Contrasts in the conception of marriage.—

Not every marriage is to be regarded as perfectly or equally valuable. We leave out of account here those marriages which are contracted without any inner attachment and merely for material or external reasons. In this place we are concerned purely with marriage from a sanitary aspect, and from the latter we can distinguish three views of the value of marriage: (1) the individualistic view, (2) the racial political view, and (3) the social and politico-social view.

The individualistic view regards marriage mainly or exclusively as an affair of the individual and relegates the contraction of marriage and its consequences to the personal will of the parties concerned.

As racial-political I consider the view which sees in marriage exclusively or principally a means for the improvement and preservation of the race and which endeavours to regulate the marriage-contract accordingly.

By the social and politico-social view we understand that which attempts to combine the interests of the individual with those of the community and to achieve for both of them the highest possible measure of prosperity.

The question is now which of these three views that we are about to discuss more fully, deserves the support of the medical profession. As a preliminary, I wish to state that as doctors we have to be familiar with all three; from each of them we can derive some impetus, and to each we must be able to do full justice.

Individualistic view.—The individualistic view seems to be the simplest; it recommends itself apparently by the consideration that marriage is intended for the welfare and happiness of the individual and that it is best to leave to everyone to look after his own interests. It is, however, easy to show that a fallacy underlies here as a rule. In marriage the welfare of one of the partners depends always on that of the other. The one-sided and dogmatic adherence of the individualistic standpoint is bound to result in harm to the individual himself. This view is as far as I can make out generally shared by the contributors to this work. I wish to mention specially the problem dealt with by *Kaminer*; it relates to the marriage and propagation of tuberculous persons, an instance which is eminently instructive in regard to the view under discussion.

But the individualistic conception must on principle be rejected not only in reference to transmissible or hereditary diseases and predispositions to disease, but generally where there is a danger that the partnership of marriage is likely to suffer through the physical or mental constitution of one of the partners. In no other connection is the principle of leaving well alone so little indicated as in matrimony.

Supposed teleology in disease.—It is certainly a mistaken exaggeration of individualism to entertain with regard to the marriage and propagation of diseased or tainted persons, the view that nature makes use of disease in order to arrive at a certain object, be that object the extermination of degenerate individuals or immunisation, and that it is therefore wrong to oppose the marriage of diseased individuals. This theory rests simply upon an error of judgment. It is one of those frequently observed cases where the theorist transfers the real or—which happens oftener—assumed action of nature to conditions of civilisation. In this instance it is not a question of impersonal natural tendencies but of highly personal processes of civilised life. How nature, if left to herself would go about it, we do not ask; natural circumstances do not demand here our attention. The opinion which attributes to nature the rôle of a reparative justice towards human actions is based in this case

upon a misconception. With the same right one might say that nature makes use of thieves and burglars in order to achieve a more just distribution of the world's goods. But the achievement of such a better state of things is not nature's business either in the one case or in the other. We do not live in a state of nature and cannot leave it to nature to put right human mistakes and wrong-doings. Besides, in practice we do not know what roundabout ways and how long nature takes to reach the goal prescribed to her; we do not even give her free scope, and we have no right therefore to inflict a mass of misery and misfortune upon entire generations, on the supposition that the diseased generation will eventually die out. There is hardly a worse sophistry than the introduction of the differently-interpreted term "nature" into subjects relating to purely human will-manifestations.

Racial-political view.—The racial-political view is almost diametrically opposed to the individualistic. We will now deal with it at some length, and at the same time broach a remarkable controversy which has recently arisen.

The opinions on the subject of marriage which are included in the designation "racial politics" are represented in most different political and scientific circles, and the proposals made by some of those who entertain them, are most revolutionary. It has been said, somewhat coarsely, with reference to this view that it tries to regulate human marriage in accordance with principles obtaining in horse-stables. Such criticism does not, however, prove anything. It would be altogether a mistake to deny to the ideas contained in racial politics every significance. There is much in them which deserves our most careful consideration from every point of view. It is already very meritorious to have called attention systematically to the interest of the community and to have pointed out the value of physical capability and resistiveness in a nation.

Connection with political conditions.—Racial politics become, however, suspicious to a certain extent through the outward circumstances under which they appear, and to this point I wish to make some reference. In history, as well as at the present time we find that racial-political demands are

generally made at a period and by nations which exhibit in a purely political respect unsatisfactory conditions. It is not from a consideration of the nation's condition but from the criticism of the political, legislative and public affairs that racial politics issue forth. They make their appearance, as a rule, when a regeneration of society is desired, in association with, and as a consequence of political doctrines. Racial politics grow not on physiological, but on political soil. It is sufficient to mention the undying and unalterable prototype of the racial politicians, the Utopian State of Plato. (See *Senator's Introduction*.)

For general reasons alone caution is, therefore, indicated in accepting the views of the racial politicians. What is specially risky is the favourite and, perhaps, unavoidable introduction of analogies from the olden times. For the laws of the ancient classical nations were not always meant to raise the character of the bulk of the people, but to create an aristocracy of citizens or race-propagators. These historical and indissoluble associations harbour in reality a certain contradiction of racial politics. A racial-political programme applicable to the constitution of modern States, has not yet been formulated, and it is very questionable whether one will ever be drawn up.

Opposition between racial-politics and hygiene.—We must mention on this occasion one difference of opinion which deserves our serious attention on account of the parties opposing each other. I refer to the recently started controversy between the representatives of racial politics and those of hygiene—two camps which would appear at the first glance more suitable for joint action and mutual support than for combating each other. The argument relates to the question whether hygiene and the measures associated with it, and which serve partly as a protection of the weak, are not calculated to lead to a deterioration of the race. This shows at once how the extremes meet. The strictest racial politics and the strictest individualism arrive at the same conclusion, namely that disease possesses as far as human society is concerned, a certain utilitarian value, seeing that it has selective results and that it eliminates the organisms which are of no good. But we have already seen how wrong it is to assign to nature an effect which

it cannot exercise in a civilised community at all or not with teleological certainty. For the rest, the opposition between racial politics and hygiene is based also upon differences of conception.

General objects of hygiene.—The foremost object of hygiene is to create the general preliminary conditions of sanitation and to avert injurious influences. This includes, for instance, the measures against the spread of infectious diseases and epidemics, the supervision of articles of food, the provision of water, sewage, etc. The different circumstances of the individual do not require consideration in this connection, it is the needs of the community and injuries to which the strong and healthy are exposed as well as the weak and the diseased, that demand our attention.¹ Nor are the differences founded on nature (in the real sense of the word) abolished by these measures. On the contrary, they continue to exert their specific effect (for instance the more injurious influence of town-life as compared with life in the country).² There can hardly be any doubt that the hygienic measures and precautions are here necessary and justified.³ The question appears to be only whether the steps taken in every single case in the name of hygiene are right or suitable. But as to the necessity of hygienic interference *per se* there are probably in this respect no two opinions.

Individual hygiene.—The hygiene which concerns itself with individual persons is of a different character to that which deals with general and more objective matters, and it engages the special attention of those who take part in the controversy which we are discussing. The question is often asked

¹See Gruber, *Führt die Hygiene zur Entartung der Rasse?* (Does Hygiene lead to the degeneration of the race?) Stuttgart, 1904, p. 26. Just as the best constitution is no safeguard against bullets, so there are many other injuries against which the body is simply powerless, for instance many poisons and some infectious germs. Health, disease and death are, therefore, purely matters of accident, whether one is affected by the respective injurious agency or not.—See also the article by Leppmann, and Grotjahn and Kriegel, *Jahresberichte über Soziale Hygiene und Demographie*, Vol. III. (1903), Jena, 1904. Vorwort, p. XII.

²Gruber, l. c. p. 4.

³Schallmeyer, in Ploetz's *Archiv für Rassen- und Gesellschafts Biologie*, p. 52 ff.

whether it is right to maintain or protect such lives as are physically bad or debilitated and to expend moreover large sums of money for the purpose. On this point I should like first of all to correct a mistake in the historical conception of racial politics. It appears there is a tendency to see something like false humanity in the endeavours of the modern era to protect the weak and the degenerate, and to compare them to their disadvantage with the arrangements in the middle-ages.

Historically speaking this is a mistake. The middle-ages can in charitable matters hardly be taken as an example of racial-political aims. It is well known that the Church, the towns, guilds, institutions and brotherhoods have in the middle-ages cared to an extraordinary extent for the weak and the poor¹ and the question is rather whether, considering the absolute increase of the population and the relative increase in the number of cases needing help, we have attained in this respect the same level as was reached by the middle-ages.—Nevertheless, the demands of the racial politicians contain here also an object which is justified and certainly deserving the support of the medical man and hygienist. Our first care is doubtless due to the healthy and not to the sick man, the aim being the creation of a capable and resistive population.²

But it is just where we want to draw practical conclusions that the above-mentioned deficiency of the racial-political view becomes evident. Its groundwork is in my opinion not really physiological, but political and social. The consequence is that the doctor who inclines to this view is apt to be induced to look at the matter from the standpoint of general social and economic conditions and to form his opinions accordingly both as regards individual cases and the interests of larger circles. In this way we have reached the third and last of the views with which we proposed to deal, namely the social and politico-social.

Politico-social view.—Social politics, where they are rightly understood, are by no means intended to lessen or render

¹See *Archiv für Rassen- und Gesellschaft Biologie*, 1904, No. 1, p. 175.

²Recent investigations have shown that also as far as the building of hospitals is concerned, the middle ages have accomplished unheard of things.

³See *Grotjahn and Krieger*, l. c. p. xiv. and *Lippmann's* article.

superfluous the activity and responsibility of the single individual. On the contrary, they ought to awaken and strengthen the sense of solidarity and responsibility in every one of us. Nor should they pursue any other object, in restricting personal liberty of action, than a greater measure of welfare for the entire community. The ultimate goal of every well-understood politico-social endeavour must be to obtain the best possible conditions for every single person, no matter whether it relates to the community as a whole or to its individual constituents.

III. Sanitary demands in detail.

Altered conditions of existence.—In discussing here certain demands in connection with circumstances which are a danger to the health of the individual and of the community, we do so entirely from the modern standpoint and looking at things as they are at the present day. An evolution of not more than 30 years' standing has brought about most pronounced changes in the outward circumstances of the population, which are visible above all, in the conditions of married and family life. There are two factors which are worth mentioning here: (1) an increased necessity on the part of the people to participate as bread-winners, and (2) a growing tendency of town-populations to become congested. As to the first point the following German statistics though nearly ten years old, are very instructive.

NUMBER OF PERSONS EMPLOYED ON AN AVERAGE IN THE
PRINCIPAL INDUSTRIES:

	Small industries (1-5 Persons)	Medium industries (6-50 Persons)	Large industries (51 persons or more)	Industries altogether
	Persons	Persons	Persons	Persons
Total sum, 1895	4,770,660	2,454,333	3,044,267	10,269,260
" " " " " " 1882	4,335,822	1,391,720	1,613,247	7,340,789
Increase in 1895 against 1882	10.0%	76.3%	88.7%	39.9%
Increase in the population, 1882-1895 14.5%				

The changes compared to the increase in the population are of considerable magnitude. The occupation-statistics prepared in 1895 give in their main figures the following groups:

Of the population are	In the year 1895		In the year 1882		In % increase Increase respectively	
	Absolute	% of the population	Absolute	% of the population	Of the group	In proportion to the entire population
1. Employed in some principal pursuit	20,770,875	40.12	17,632,005	38.99	+ 17.50	+ 1.13
2. Servants . . .	1,339,316	2.59	1,324,924	2.93	+ 1.09	- 0.34
3. Dependents . .	27,517,285	53.15	24,910,695	55.08	+ 10.46	- 1.13
4. Independents without occupation . .	2,142,808	4.14	1,354,486	3.00	+ 58.20	+ 1.14
Total	51,720,284	100	45,222,113	100	+ 14.45	

Increase in the number of the employed.—

Only the two main groups 1 and 3 are of somewhat greater interest to us. Together they amount to 94.07% and 93.27% of the population. Whilst the absolute figures from 1882 to 1895 show a considerable increase, the percentage of the "dependents" in proportion to the population has gone down and the percentage of the "employed" has gone up. A further remarkable change becomes apparent if we distinguish the groups according to sex.

	Male persons		Female persons	
	1895	1882	1895	1882
1. Employed in some principal pursuit	61.03	60.58	19.97	18.42
2. Domestic servants	0.10	0.19	4.99	3.87
3. Family dependents	34.83	36.49	70.01	72.64
4. Independents without occupation	4.04	2.94	4.23	3.04

Increase of female labour.—We see from this that already in the period 1882-1895 women have to a greater extent than men changed from the group of "dependents" to that of "employed." Since then this movement has in Germany become still more accentuated.

The following are the international figures giving the numbers of those actively employed in some occupation:

States	Year of census	Employed males. % of male population	Employed females. % of female population	Together. % of population
Germany	1895	61.1	25.0	42.7
Austria	1890	63.2	47.3	55.1
Hungary	1890	62.8	24.9	43.7
Italy	1881	66.3	40.2	53.2
Switzerland	1888	61.4	29.0	44.8
France	1896	63.7	33.0	48.3
Belgium	1890	59.8	26.2	43.0
Netherlands	1899	59.4	16.8	37.8
Denmark	1890	57.5	21.0	38.8
Sweden	1890	54.5	19.7	36.6
Norway	1891	55.8	23.6	39.0
Great Britain and Ireland	1891	63.4	26.8	44.5
United States of America	1900	61.3	14.3	38.4

These figures do not supply an exact comparison as the methods by which they are obtained are not alike in all countries. This is seen especially in the great fluctuations of the percentages of the females employed. On one point, namely the hours of labour and the duration of the employment, the statistics are altogether silent. It is, of course, of the greatest importance whether the hours of labour are 9, 10 or 12 a day. Then only those are numbered who are employed in some principal pursuit. At all events, the slight participation in labour by the women in America is a symptom which deserves our utmost attention. We may draw from this the inference that the raising of the social status of women is not, or not always, accompanied by an increased participation on their side in the modern occupational activity.

Increase in the employment of young persons and women.—The above-mentioned transition of "family dependents" into the class of "employed" persons is particularly well marked in the figures for Germany relating to so-called "protected" labour (the employment of women and young persons in factories and workshops).

YOUNG PERSONS (MALE AND FEMALE) EMPLOYED IN GERMAN FACTORIES.

(FROM THE REPORTS OF FACTORY INSPECTORS.)

Year	Children under 14 years		Young persons of 14-16 years		Adult women-labourers	
	Male	Female	Male	Female	From 16-21 yrs	Above 21 yrs
1896	3343	1969	159,214	80,334	270,266	426,113
1897	3770	2381	172,398	87,172	286,682	432,001
1898	4301	2771	184,502	91,884	288,553	475,728
1899	4497	2911	196,481	98,664	297,387	501,804
1900	5854	3395	225,146	103,932	311,041	522,578
1901	5376	3578	235,369	100,543	310,211	537,178

It is necessary to mention that these figures refer only to persons employed in factories, as so-called workshop-labourers are not on the whole subject to the protective regulations of the industrial by-laws. The large numbers of home-workers are, therefore, not included, although they have recently in various industries increased very materially.

We thus see in various directions a constant increase in the number of those who work for a livelihood, which affects the women particularly. I cannot enter here into a minute discussion of the causes which render this increased activity necessary; they belong to the problems associated with capitalistic political economy.

Congestion in towns.—The second of the above-mentioned factors, namely the congregation of the people in towns, makes its influence felt in two directions especially, i. e. the question of housing accommodation and the question of food. We can only touch here briefly the wide subject of dwelling-houses in towns, and only in so far as it affects the sanitary

and economic conditions of the population. Very few of the inhabitants of towns own the houses they live in, the vast majority of them are "tenants" in whose domestic budget the yearly rent forms a very considerable item and one which is constantly growing on account of the incessant raising of rents.¹ The necessity of finding more money to meet this growing expenditure for rent, causes many families either to retrench in other respects or to look for additional or home work in order to earn more. From a social and sanitary point of view the conditions among which the people dwell are often totally unsatisfactory. Even where it is not a question of unhealthy and overcrowded rooms, the feeling of home-comfort in the small and middle-sized dwellings is frequently diminished or destroyed.² Theoretically, everybody recognises the radical importance of the housing accommodation on married and family life, practically a great deal remains yet to be done. On a par with the changes in the housing arrangements is the revolution which has taken place in the manner of life and the nutrition of the people. This, too, is the ultimate result of the altered economics, of the transformations in the abode, in the employment and in the industrial life of the populace.³

Recent changes and their consequences.—

The changes in the state of the population of which I spoke above as having taken place during the last generation, are of such a nature that the period about the year 1870 already seems in many respects to lie a long way back in history. But we cannot say that we have as yet fully benefited by the changes mentioned. The measures by means of which we try to combat the drawbacks of the modern developments have so far the

¹In Berlin rents have gone up from 103 marks per head of the population in 1870 to 197 marks in 1901, an increase which naturally affects chiefly the lowest classes, but which the middle class also feel very severely.

²Translator's note: To the English reader this opinion of a German author presents considerable interest, as there is a tendency in some quarters to introduce the continental system of housing accommodation in the shape of large barrack-like buildings. It is as well to know that flats are not appreciated by those who have had a longer experience of them.

³See *Grotjahn*, *Über Wandlungen in der Volksernährung*, Leipsic, 1902, and my "*Rheinische Wohnverhältnisse*." Jena, 1903, p. 46.

character of corrective remedies, of attempts to deal outwardly with single incidents. But the problems of modern life require a treatment which reckons consciously with accomplished results. *Senator* in his Introduction has rightly pointed out that not the individual only, but also the State and the community, should devote increased attention to the somatic conditions of married life, since this is dictated in the interests of public health. We shall now deal briefly with a few of the necessities of a social character.

Employment of women.—The duties which woman has to fulfil in her natural capacity require a special protection of the female sex in connection with labour. The West-European civilised countries have already known such protective regulations under the simple conditions of guild-life: in industries associated with severe physical exertion the employment of women was sometimes altogether prohibited.¹ The protection of the industries carried on by guilds or other capitalists became, however, partly obsolete at the end of the 18th century, and partly purposeless. Technical progress with its cheap labour appliances brought about a new condition of affairs which necessitated authoritative regulations. In the course of the 19th century new protective laws were, especially under the guidance of England, evolved gradually, the legislation of the civilised countries created in this connection a class of labourers which may be described as in need of protection, and which included first children, afterwards young persons and later on the female sex generally. The protection of female workers consists in fixing a limit to their hours of labour which is different in different countries; in prohibiting their employment in occupations which present risk to health or morality; in prohibiting the employment of women shortly after child-birth.² These protectives are, however, incommensurate with our present-day conditions and their extension is urged in various

¹See my "Französisches Gewerberecht vom 13ten Jahrh. bis 1881" p. 100. Other protective regulations will be found in the Index of that work under the entry, "Arbeiterschutz."

²See the article by *Leppmann*.

quarters, although it must be admitted that such a course presents considerable economic difficulties.¹

Tuberculosis and housing accommodation.

—Among the diseases which it is necessary to combat by public and social measures, tuberculosis occupies the front rank. Social politics have already taken a prominent part in the struggle against tuberculosis. Much has already been done towards futilising this dreadful scourge, by reducing industrial and occupational dangers, by making better provision for the suffering sick, and by the introduction of preventive measures against the spread of infection. The special scientific aspects of this question having been fully dealt with in other parts of this work, I should like to say something here about a factor of more general importance, namely the rôle played by the dwelling-house as a transmitter of disease-germs.

Dwelling-houses and disease.—The injurious influence of the dwelling-house may effect a transmission of disease in two ways: (1) through the manner in which the dwelling-house is made use of, (2) through the deficient state of the dwelling as such. The great majority of tuberculous persons remain with their families not only during the milder stages of the disease, but up to the fatal end. During the year 1900 only 10,286 out of 70,602 persons who died from tuberculosis in Prussia, that is about one-seventh, died in public institutions, the remaining six-sevenths stayed in their own homes until they passed away.² This means that the whole process of the disease takes place as a rule within the walls of private dwelling-houses and amid the relatives of the patients.

There are no general available figures with regard to the housing accommodation of tuberculous persons; it is at any rate no better than that of the healthy classes in full possession of their earning capacity. The few isolated descriptions of the dwellings of consumptives which are occasionally published, reveal a very unsatisfactory state of things, and this is particu-

¹See Adele Gerhard and Helene Simon, "Mutterschaft und geistige Arbeit," Berlin, 1901, p. 5; Alice Salomon, soziale Frauenpflichten, Berlin, 1902, p. 64 and p. 101.

²Kayserling, Tuberculosis, 1, 1903, p. 250.

larly the case with regard to the home-work carried on in these dwellings. In some places an attempt has been made to deal statistically with the housing accommodation of the tuberculous. Such a table has for instance been prepared by one of the sick-clubs (tradesmen and chemists) of Berlin, giving a special place to the group of sufferers from pulmonary complaints, and though it is based upon a limited material it is none the less worthy of attention. The statistics deal with 11,167 members disabled through disease.

	Living in families				Night-lodgers			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
Pulmonary diseases . .	884	17.71	725	15.54	186	17.22	73	16.4
Diseases of respiratory organs	467	9.36	484	10.37	76	7.04	30	6.97
Diseases of nervous system	272	5.45	313	6.71	55	5.09	34	7.91
Other diseases	3368	67.48	3144	62.38	763	70.65	283	64.64
	4991	100	4666	100	1080	100	430	100

The question raised in connection with these statistics "Has the patient a bed at his or at her entire disposal?" was answered in the negative by 957 men = 15.76% and 1038 women = 20.36%. Among these were 193 men and 193 women suffering from pulmonary affections; 18.03% of the men and 24.19% of the women with lung-disease had to share their beds with other persons.

A table prepared for Mannheim by *F. C. Freudenberg* and arranged in 5 groups according to the housing-accommodation,

POPULATION IN DWELLINGS CONSISTING OF

Six or more rooms	4-5 rooms	Up to 3 rooms and containing		
		Less than 2 individuals	2-3 individuals	More than 3 individuals
		Per room		
% 10.3	22.2	23.4	34.0	42.3

gives, after omitting all children up to 5 years of age, the preceding percentages of mortality.

The connection between dwelling-accommodation and the mortality from tuberculosis is here strikingly apparent. A similar result is shown (according to Dr. *Schott*) if the density of the house-population is taken as the only basis, but no connection can be shown to exist between the age of the houses and the mortality from tuberculosis.¹

Transmission of disease.—The risk of infection through the intermediary of the dwelling-house is also increased by the frequent change of tenants in large towns. As to the dangers arising from the exercise of a home-industry in infected rooms and the possible transfer of disease-germs to the articles there manufactured, attention has already been called to them above.

State of the dwelling.—Of great influence is further the constitution of the dwelling as such. The use of the dwelling may be free from all objections; the tenant may scrupulously carry out every medical and hygienic prescription. And yet the dwelling may in itself be possessed of a serious drawback owing to the circumstance that its situation is faulty. Among the conditions which the situation of a dwelling-house must fulfil, it is generally recognised that sufficient light and sunshine take a prominent place. There is, however, another circumstance which is hardly less important, though it does not receive the attention it deserves, namely the provision of a cross-ventilation inside the dwelling. *Naegeli* has already pointed out the great hygienic value of such a ventilation, but the number of houses in which it is disregarded is not only great but is actually growing. The reason lies in the requirements of the building-plans in vogue, and medical men and hygienists should make it their business to bring about the necessary modifications. There are no insuperable difficulties of an economic nature in the way, the high rents paid by the tenants being sufficient to command satisfactory housing arrangements.

¹*Zeitschrift für Wohnungswesen.* Vol. 11, 1904, p. 88.

Sanitation and marriage.—The object of the present work as enumerated in the Introduction, is to consider sanitary questions as they have any bearing on marriages and the married state. For this reason several of the contributors have found themselves confronted by a consideration which has often engaged the attention of medical men as well as of the lay public, i. e. the question whether on legal and politico-social grounds the contraction of marriage ought not to be made dependent upon the presentation of proofs that the bodily health is good or that there is at least an absence of such diseases which may be a source of danger to the other married partner or to the eventual children.

Certificate of health.—This is doubtless one of the most important problems ever brought forward, and such an amount of material has been collected in these pages towards its solution as we have never before had at our disposal. The introduction of health-certificates for marriage purposes would be an inauguration of the most far-reaching importance: it would constitute a radically new departure such as our present legislations have never possessed. It must, therefore, be admitted that the subject requires our most careful attention. In passing, I should like to add that the contributors to this manual are unanimously in favour of the innovation and some of them have even vigorously advocated its introduction.

Definition.—By a marriage-certificate of health we should understand a document which would state that the bearer of the certificate, having the intention to get married, has subjected himself to a medical examination on certain points, the result of which, whether positive or negative, would be entered in such document. As to the details of the examination and the questions to be answered, this must be left to the consideration of the legislature. On points other than those prescribed, the doctor would have to remain silent. But on the other hand it would have to be understood that no responsibility, medical or legal, attaches to a medical man through the fulfilling of this duty, provided he acts *bona-fide*. This certificate would have to be handed by the candidate for marriage to the other intended partner or to his or her authorised legal representative.

At the celebration of the marriage the officiating person would have to satisfy himself that the health-certificate has been duly handed over, without it being necessary for him to inform himself as to its material contents.

No prohibition of marriage.—The question arises, what would be the consequences if such marriage-certificates of health were introduced. I need hardly say that such certificates have absolutely nothing to do with the proposal to prohibit the marriage of individuals affected with certain diseases or who are generally of feeble health, a proposal made by some extremists. Such a suggestion cannot be taken seriously. Whether a prohibition of marriage is theoretically feasible, may be left an open question; practically it would, at all events, as some attempts in that direction have shown, fail to achieve the desired result.¹ It may be possible to prohibit a man from marrying, but not from practising extra-conjugal intercourse or from procreating children. The idea of a marriage-certificate of health is radically opposed to that of the prohibition of marriage. It does not propose any interference with the free will of the parties contracting the marriage.

Marriage in spite of ill-health.—The certificate is not even intended to prevent the marriage absolutely, if the state of health of the applicant is unsatisfactory. Those who persist in their intention to marry, although they are aware of the real condition of affairs, may do so. There are numerous cases where in spite of the physical weakness or imperfections of one of the partners, the marriage may be desirable or where it may turn out perfectly happy. Such marriages may be dictated by pure attachment and considerations of health are then rightly ignored. An example of this kind has been furnished by *Ewald* in his article (p. 436) which was as remarkable for its motives as it was happy in its results. The receiver of the certificate is left free to act according to his or her discretion; in this respect there would be no change from the conditions as we know them to-day.

¹See the articles by *Ledermann*, *Eulenburg*, and *Leppmann*.

Consequences of the innovation.—The intended and probable effect of the introduction of such certificates will be: (1) that greater regard will be paid as a rule to the conditions of health than has hitherto been the case, and (2) that frivolous or unscrupulous conduct on the part of diseased candidates for marriage will as far as possible be prevented. This double object is certainly of sufficient importance, and it can be achieved without difficulty or serious trouble. We must look at the thing from the standpoint of recent experiences and from that of developments actually accomplished. As already mentioned at the commencement of this chapter our modern views of life and economics have created social conditions from which we must draw the above conclusions. Particularly the sexual diseases have, for reasons which it is not necessary to discuss here, assumed the character of destructive epidemics which constitute a growing danger to individuals as well as to the public health. Here the certificate of health would act as a beneficial measure of the deepest importance, and it would tend to remove or ameliorate evils which cannot be obviated in any other way. The results could not be otherwise than favourable. There would be more caution in sexual intercourse; the sense of responsibility for one's own health and for that of others—which seems in this connection to be especially blunted—would become appreciably revived and strengthened.

Of course, it is possible that mistakes and deceptions will arise in various directions in the granting of the certificates of health, but absolute success cannot and should not be expected here any more than in other human institutions. The certificate is not, moreover, by any means intended to be a guarantee of the state of health of the person examined. This is impossible for external reasons alone; an infection may, for instance, take place between the granting of the certificate and the contraction of the marriage, be the interval ever so short, or it may occur after the consummation of the marriage. It will be altogether more correct to describe the certificate of health only as a politico-social measure which is necessitated by certain fixed social evils. But these measures are not calculated to solve the

various civil and criminal questions which have recently been raised in reference to the sexual intercourse of diseased persons.¹ The two objects are altogether different.

Practical realisation.—As regards finally the realisation of the suggestion, there do not seem to be any considerable difficulties.

The number of marriages contracted in the German Empire in 1901 amounted to 468,329. That the granting of the certificates of health would involve an excessive activity of the medical profession is hardly likely. I mention only that the sick-clubs alone (with a membership of 9.6 millions) had in 1901 to deal with 3,617,022 cases of disablement through disease. Compared to the entire population the examinations for marriage-certificate purposes would hardly mean more than an increase of 4.5% in the medical activity. The number of medical men in Germany was in 1902, 29,133.

One point, however, requires some consideration, namely whether a certificate of health should be presented by both parties to a marriage, in other words by both sexes. *Neisser*, whose excellent investigations on this subject are particularly worth studying, seems to incline to the opinion that the question must be answered in the affirmative. But I believe that such a regulation would meet with almost insurmountable opposition, and that the necessities of the case do not indicate it absolutely. In the first place there is an objectionable feature in submitting an innocent young girl to a physical examination, and this objection would no doubt be shared by all the parties interested including the prospective husband, wife and parents-in-law. Besides, the facts do not appear to favour the necessity of such a requirement. Regarding gonorrhœal diseases even *Neisser* arrives at the conclusion that, excepting prostitutes, these affections are prevalent among women to a far lesser extent than among men, and that it is the husbands who are responsible for their injurious effects upon the married state. If we bear in mind, therefore, what is practically realisable and absolutely necessary we shall conclude that the introduction of marriage-

¹See the articles by *Ledermann* and *Neisser*.

certificates of health for the male sex i
from the standpoint of the medical i

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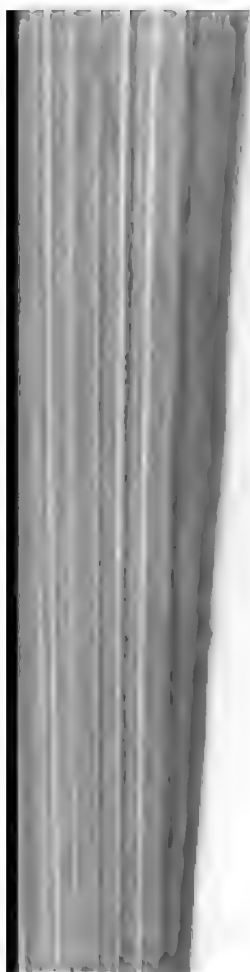
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N203 Senator, H. Health
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NAME	DATE DUE
E. B. Will	Dec 23 1914
Amster	Dec 23 1914
C. Wetmore	Dec 23 1915
O. E. Kuchel	Aug 19 1915
Dr. Congdon	Dec 18 1915
T. A. Case	Dec 18 1916
R. A. Ristler	Sept 11 1916
Dr. S. Shepard	May 13 1917
L. Wiergaft	July 12 1917
M. Anderson	Aug 11 1917
Univ. Oregon	FEB 1918
L. Colodny	MAY 1918

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NAME	DATE DUE
E. B. Will	OCT 23 1904
Amelia	NOV 29 1904
C. Wetmore	NOV 23 1905
O. E. Kuhl	AUG 19 1905
Dr. Congdon	Dec 18 1905
T. A. Case	NOV 20 1906
R. A. Richter	NOV 22 1906
Dr. Sereyand	NOV 23 1906
L. Wiegand	NOV 23 1906
M. Anderson	SEP 25
univ. Oregon	FF
L. Colodney	MS

